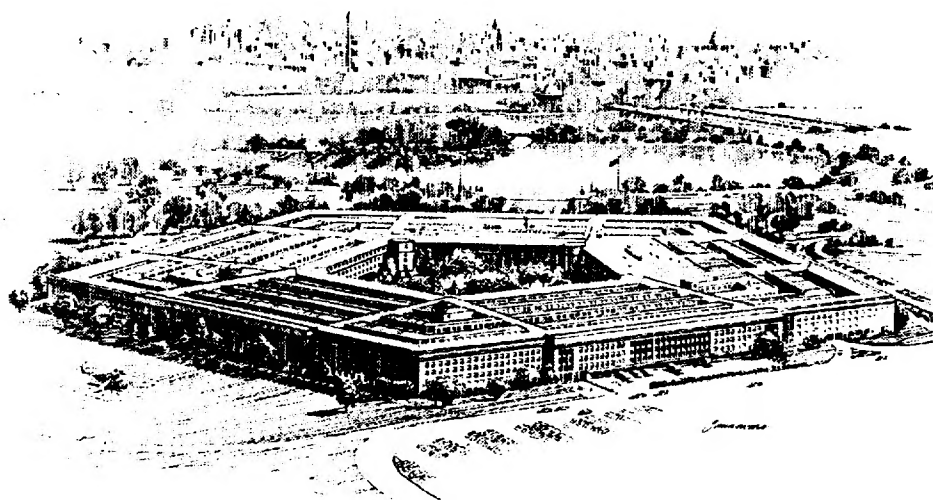


Annual Report

to the
President
and the
Congress



William S. Cohen
Secretary of Defense



2001

The Annual Defense Report fulfills the requirements of Section 113(c) and (e) of Title 10 of the United States Code and Section 405 of the Department of Defense Reorganization Act of 1986 (Public Law 99-433).

Cover drawing of the Pentagon was created by Don Cannavaro
©Cannavaro 1981. All rights reserved. Reprinted with the permission of Don Cannavaro. Permission for further duplication must be obtained from author.

Report of the Secretary of Defense
to the President and the Congress

2001

TABLE OF CONTENTS

MESSAGE OF THE SECRETARY OF DEFENSE	iii
---	-----

PART I: Strategy

CHAPTER 1: U.S. Defense Strategy	1
CHAPTER 2: The Military Requirements of the Defense Strategy	19

PART II: Today's Armed Forces

CHAPTER 3: Employing U.S. Forces To Implement the Defense Strategy	29
CHAPTER 4: Readiness	41
CHAPTER 5: Conventional Forces.	49
CHAPTER 6: Nuclear Forces and Missile Defenses	89
CHAPTER 7: Managing the Consequences of Domestic Weapons of Mass Destruction Incidents.	101
CHAPTER 8: Information Superiority and Space	107
CHAPTER 9: Total Force Integration.	137
CHAPTER 10: Quality of Life and Personnel	153

PART III: Transforming U.S. Armed Forces

CHAPTER 11: A Strategy for Military Transformation.	175
--	-----

PART IV: Transforming the Department of Defense

CHAPTER 12: Defense Reform Initiative	195
CHAPTER 13: Transforming Financial Management	199
CHAPTER 14: Acquisition and Logistics Reform	205
CHAPTER 15: Installations	219
CHAPTER 16: Industrial Capabilities and International Programs	231

PART V: The FY 2002 Defense Budget

CHAPTER 17: FY 2002 Defense Budget.	243
---	-----

PART VI: Statutory Reports

Report of the Secretary of the Army.	247
Report of the Secretary of the Navy	255
Report of the Secretary of the Air Force.	265
Report of the Chairman of the Reserve Forces Policy Board.	279

APPENDICES

A. Department of Defense Organizational Charts	A-1
B. Budget Tables.	B-1
C. Personnel Tables.	C-1
D. Force Structure Tables	D-1
E. Goldwater-Nichols Act Implementation Report	E-1
F. Personnel Readiness Factors by Race and Gender	F-1
G. National Security and the Law of the Sea Convention	G-1
H. Freedom of Navigation	H-1
I. Government Performance and Results Act	I-1
J. Information Technology Management Goals	J-1
K. Justifications for FY 2001 DoD Committees Subject to the Federal Advisory Committee Act	K-1
L. Resources Allocated to Mission and Support Activities	L-1
M. Foreign Military Assistance	M-1
N. Personnel Tempo	N-1

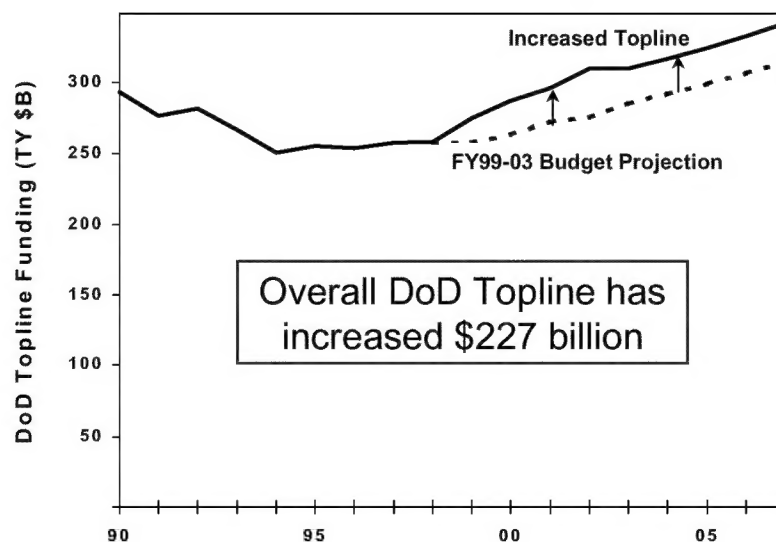
MESSAGE OF THE SECRETARY OF DEFENSE

MESSAGE OF THE SECRETARY OF DEFENSE

In keeping with the three top priorities I set forth upon assuming office in 1997, we have used the past four years to protect American security interests and preserve a strong and ready military by investing in our people, maintaining readiness, and accelerating modernization. To achieve these goals, we proposed \$112 billion in additional resources in President Clinton's FY 2000 budget—the first sustained increase in defense spending in 15 years. Including subsequent presidential and congressional increases, the total of \$227 billion in additional resources is now programmed to support these top priorities:

- First, to continue recruiting and retaining high quality personnel, these added resources fund the largest increase in military pay and benefits in nearly two decades;
- Second, to maintain readiness, additional funding for training and Operation and Maintenance (O&M) is ensuring the continued high readiness of our first-to-fight forces; and,
- Third, to ensure future readiness through a robust modernization program, we reversed a 13-year decline in procurement funding in FY 1998. Through sustained investment, we have also achieved the long sought—yet long elusive—goal of \$60 billion in annual procurement funding, a dramatic increase of some 33 percent in the past three years.

These accomplishments would have been impossible without the willingness of leaders across the Executive Branch, the Defense Department, and the Congress to set aside narrow interests in favor of the national interest. Indeed, the progress of the past four years underscores that we can best defend our national security interests abroad by uniting behind a bipartisan security policy at home.



PROTECTING U.S. INTERESTS TODAY, PREPARING FOR TOMORROW

While fulfilling each of our three top priorities, U.S. forces have pursued our strategy—as defined by our 1997 Quadrennial Defense Review (QDR)—to protect and promote American interests: shaping the international security environment, responding to the full spectrum of crises, and preparing for the challenges of the future.

Over the past four years, we have shaped the international security environment by promoting regional stability, reducing threats, and preventing conflicts before they threaten American interests and lives.

In Europe, we have laid a solid foundation for peace and transatlantic security in the 21st century by working with our allies to enlarge NATO, reorient the alliance to face future threats, and enhance the Partnership for Peace. We have also forged a new relationship with Russia, which includes our Cooperative Threat Reduction Program to reduce potential nuclear threats. We have played an indispensable role in promoting peace in Bosnia and Kosovo.

In the Asia-Pacific region, our forward deployed forces and active engagement have continued to undergird regional peace, stability, and prosperity, and our alliances have been reoriented to meet the challenges of the new era. Specifically, we have revised and are implementing the U.S.-Japan Guidelines for Defense Cooperation; continued to deter North Korean aggression while laying the basis with Seoul for the alliance after the Korea question is resolved; updated our alliance with Australia; deepened ties with regional allies in Thailand, the Philippines, and Singapore; and begun building multilateral security capabilities. At the same time, we have cautiously expanded mutually beneficial military-to-military contacts with China.

In the Near East and Southwest Asia, U.S. forces have continued to ensure the free flow of oil through the vital sea lanes of the Persian Gulf and prevented Saddam Hussein from threatening his people or his neighbors. We have significantly enhanced bilateral security cooperation with partners in the region and have begun building mechanisms for multilateral security cooperation.

In the Western Hemisphere, we have normalized our security relationships and worked with our regional partners to expand military cooperation in a manner that strengthens democracy and civilian control of the military.

In addition to shaping the security environment, U.S. forces have responded to the full spectrum of crises and threats to American interests around the world. Since 1997, these have included:

- Conducting a 78-day, 38,000-combat sortie air campaign with our NATO allies that succeeded in reversing Slobodan Milosevic's reign of terror in Kosovo with the loss of only two planes and no U.S. lives;
- Conducting an air campaign in December 1998 with our British allies to degrade Iraq's ability to deliver chemical, nuclear, and biological weapons and its ability to threaten its neighbors;

- Enforcing “no-fly” zones over Iraq to contain Saddam Hussein and prevent Iraq from threatening its neighbors;
- Launching strikes in August 1998 against the terrorist network of Osama bin Laden after it attacked U.S. embassies in East Africa and was planning additional attacks (other terrorist attacks have been disrupted by U.S. forces and civilian agencies);
- Evacuating noncombatants from life-threatening civil unrest in west Africa and Albania;
- Providing massive humanitarian assistance to Central America in the wake of Hurricanes Mitch and Georges; and,
- Fighting fires in the western United States and Indonesia.

TAKING CARE OF PEOPLE—RECRUITING & RETAINING AMERICA’S BEST

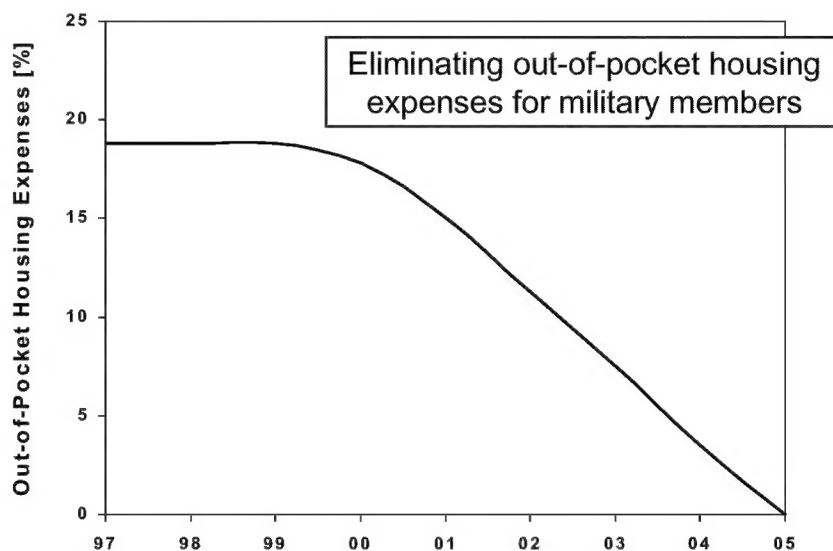
To continue recruiting and retaining high quality personnel in the face of record economic growth and lucrative opportunities in the private sector, we proposed—and are now implementing—a comprehensive package of quality of life improvements for our forces and their families.

Pay. We proposed a 4.4 percent pay increase for FY 2000—the largest increase in military compensation since 1982 (subsequently increased by Congress to 4.8 percent). All our military men and women will receive an additional pay raise of 3.7 percent in January 2001. Many personnel with certain critical skills have also received targeted raises that increased their pay by over 5 percent. We have also proposed that Congress reform military pay tables to allow additional increases of up to 5.5 percent for raises associated with promotions, which would help us to retain our most experienced personnel. Taken together, these initiatives translate to sustained increases in pay for the typical service member (in the case of the following chart, an E-4—sergeant or petty officer).



Benefits. We proposed and fully funded restoration of retirement benefits that had been reduced in the mid-1980s. As a result, after 20 years of service, military personnel are once again able to retire at 50 percent of their basic pay—a powerful incentive for our most talented personnel to stay in the force.

Housing. We proposed and have begun to implement an historic improvement. Last year, we increased the Basic Allowance for Housing (BAH) so that out-of-pocket expenses for personnel living off base have been reduced from 19 to 15 percent. Furthermore, we have pledged \$3 billion to eliminate entirely these out-of-pocket housing expenses by FY 2005—putting still more money into the pockets of our forces and their families. We remain committed to eliminating inadequate family housing units by 2010.

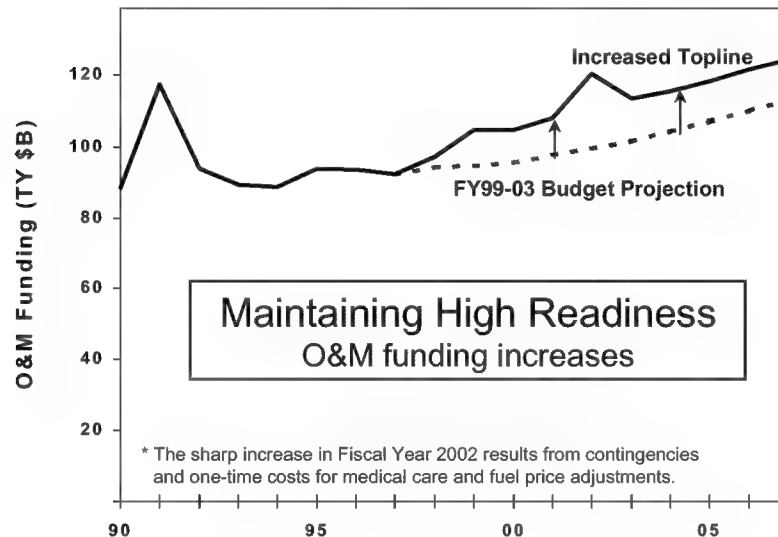


Health Care. Working with Congress, we are moving forward with important changes to our TRICARE military health system to improve health care for active duty service members and their families and to provide a new pharmacy benefit for our military retirees.

As a result of these and other quality of life initiatives, the quality of America's military is higher than ever. Every service met its active duty recruiting goal in FY 2000. With our military men and women also holding more advanced degrees, they are more educated than ever. With more of the force staying in service for longer than 10 years, they are more experienced than ever. Indeed, while challenges always remain, the U.S. armed forces are still recruiting and retaining the best and brightest this nation has to offer.

PROTECTING READINESS TODAY

To maintain readiness at a time of high operational tempo, we increased funding for training and O&M, which includes spare parts. In fact, when adjusted for current troop levels, today's O&M funding actually exceeds 1980s levels. Moreover, this increased funding makes it less likely that future readiness pressures will draw away resources from critical modernization needs, as has occurred so often in the past.



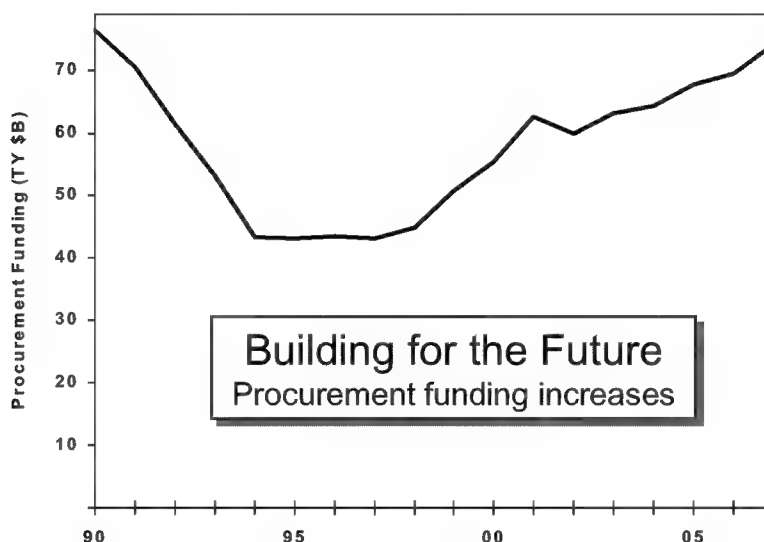
To further enhance the readiness of U.S. forces, we have constantly assessed readiness indicators, operating tempo, and the impact of our commitments on our people. When possible, we also have used reserve forces to ease the burden on our first-to-fight units.

To ensure U.S. forces remain ready in a rapidly changing world, we have ensured that U.S. forces adapt to change just as rapidly. In the wake of Operation Allied Force in 1999, the Chairman of the Joint Chiefs and I insisted that the initial "lessons learned" from that air campaign be identified and integrated quickly into the budget—not in years (as after past conflicts), but in months. As a result, the force in place today reflects many of the advances gleaned from that operation.

In short, the readiness of our first-to-fight forces remains high, and the U.S. military remains capable of executing our strategy of fighting and winning two major theater wars.

MODERNIZING AND TRANSFORMING THE FORCE

Several major accomplishments will continue to transform U.S. forces for years to come: our reversal in FY 1998 of the 13-year decline in procurement funding; reaching our goal of \$60 billion in annual procurement funding in FY 2001; and continued investments that are programmed to increase procurement spending to \$70 billion by 2005. As noted above, increased O&M funding also reduces the chance that this procurement funding will be siphoned off for more immediate needs. Taken together, these changes will provide the long-term stability and consistency that acquisition and development of defense programs and systems require.



U.S. forces are now engaged in a genuine Revolution in Military Affairs that is fundamentally reorienting operational concepts and doctrines. As outlined in this report, each service is pursuing extensive experiments to develop new approaches to warfare that exploit the most advanced technologies to dramatically increase the speed, precision, and firepower of U.S. forces.

To complement and integrate these service efforts, we redesignated U.S. Atlantic Command as the Joint Forces Command in 1999, thereby institutionalizing joint experimentation. In the coming years, several of these revolutionary concepts will further enhance interoperability, jointness, and readiness. These include:

- Joint Task Force Headquarters and Joint C4ISR Capabilities—ensuring future Joint Task Force headquarters and subordinate units are more effectively linked with real-time operating systems that include intelligence, surveillance, and reconnaissance assets;

- Focused Logistics—providing increasingly streamlined logistics to support U.S. forces over extended distances with the minimal infrastructure possible; and,
- Attack on Critical and Time Sensitive Targets—using streamlined “sensor-to-shooter” communication links to rapidly identify, target, and engage highly mobile assets capable of delivering nuclear, chemical, or biological warheads.

In the past four years, U.S. forces—and the Defense Department that supports them—have also reoriented themselves to confront the new asymmetric threats of the 21st century.

To improve the ability of U.S. forces to fight and survive on battlefields contaminated by chemical or biological weapons, we have added more than \$1 billion to upgrade detection, warning, protection, and treatment of these deadly agents.

To ensure the integrity of the Department’s critical information networks, we have strengthened our cyber defenses and assigned responsibility for protecting our networks to U.S. Space Command, thereby integrating this important mission into our larger warfighting mission.

To defend the United States against a limited strategic ballistic missile attack, we have advanced the National Missile Defense program from the research and development phase to the acquisition phase to give the next President and Congress the option to deploy such a program.

To protect American citizens from the consequences of an incident involving nuclear, chemical, or biological weapons on U.S. soil, we continue to create teams of National Guardsmen to advise and assist cities and communities in the event of a domestic incident involving these weapons of mass destruction. Under a program that has since been transferred to the Justice Department, we trained local first responders in more than 100 U.S. cities, and we created the Joint Task Force-Civil Support to provide assistance to civilian agencies that have federal responsibilities for consequence management.

CONTINUED SAVINGS FROM REFORM AND STREAMLINING

To keep pace with a streamlined and more agile force, we have transformed the Department into a streamlined and more agile support structure. Under the Defense Reform Initiative that we launched in 1997, we have adopted many of the best business practices of the private sector, consolidated and streamlined organizations, transformed our financial management and travel operations, continued reforming our acquisition process, and are instituting paperless contracting. Through competitive sourcing alone, we expect to save \$11.2 billion between FY 1997–2005 and \$3.4 billion each year thereafter. Taken together, our efforts have institutionalized reforms that—if continued by our successors—will continue to streamline support operations, save billions of dollars, and improve the Department’s ability to support our men and women in uniform.

However, as I have indicated every year in this report, our greatest opportunity for savings lies in continued reductions in the excess infrastructure left over from the Cold War. The four rounds of Base Realignment and Closure (BRAC) already undertaken will yield more than \$15 billion in savings through 2001 and \$6 billion each year thereafter. Another two rounds of BRAC could ultimately save over \$20

billion by 2015—\$20 billion that could be directed toward further improvements in the quality of life of our forces and their families and procuring the tools and technologies our forces require. In short, our smaller, reduced force structure continues to demand a smaller, reduced support infrastructure.

AMERICA'S MILITARY—A TRANSFORMED FORCE PREPARING FOR THE FUTURE

This Administration leaves office having fulfilled its commitment to the American people and to those who wear this nation's uniform. We have not merely preserved the best-trained, best-equipped, best-led fighting force the world has ever seen. We have improved and begun reorienting the U.S. military to confront the new threats of this new century.

Indeed, over the past four years we have done more than simply establish a blueprint for the future. We have laid the foundation for an information-age military backed by fundamentally new concepts, tactics, and doctrine. As a result, our successors inherit a military that remains the envy of the world and the most respected institution in America. Today's force is not only qualitatively better than the one that triumphed in the Gulf War a decade ago, it continues to exceed the high standards of the force that prevailed over Kosovo just 19 months ago.

Yet any radical reorientation of the U.S. armed forces cannot be completed by any single administration. Rather, success will require the commitment and cooperation of the Executive Branch, the Defense Department, and the Congress over many years.

Ultimately, the strength, morale, and success of America's armed forces—especially our ability to recruit and retain high quality people and secure the resources they need—rests on the continued support of the American people. That is why my wife Janet and I have engaged in an unprecedented campaign to raise public awareness and appreciation for the unique sacrifices and needs of those who wear this nation's uniform. In an era when a smaller, all-volunteer military will likely be less visible in American society, it will remain incumbent on U.S. leaders to encourage continued public support for a strong, well-trained, and well-equipped military.

This report therefore outlines the Department's plans for preserving our military preeminence, sustaining the momentum of recent years, and protecting American lives and interests for decades to come.

PART I
STRATEGY

CHAPTER 1

U.S. DEFENSE STRATEGY

Since the founding of the Republic, the United States has embraced the fundamental and enduring goals of maintaining the sovereignty, political freedom, and independence of the United States, with its values, institutions, and territory intact; protecting the lives and personal safety of Americans, both at home and abroad; and promoting the well-being and prosperity of the nation and its people.

Achieving these basic goals requires fostering an international environment in which:

- Critical regions are stable, at peace, and free from domination by hostile powers.
- The global economy and free trade are growing.
- Democratic norms and respect for human rights are widely accepted.
- The spread of nuclear, biological, and chemical (NBC) and other potentially destabilizing weapons technologies and their means of delivery are minimized, and the threat from existing systems is effectively countered.
- The international community is willing and able to prevent and, if necessary, respond to crises that may threaten security and stability.

In striving toward this international environment, the United States plays a leadership role by working closely and cooperatively with nations that share its values and goals, and influencing those that can affect U.S. national well-being.

THE SECURITY ENVIRONMENT

There are many positive aspects to the security environment at the dawn of this new century. The threat of global war remains remote and the nation's core values of representative democracy and market economics are spreading throughout many parts of the world, creating new opportunities to promote peace, prosperity, and enhanced cooperation. Relationships with friends and Allies in Europe, the Pacific, and elsewhere around the world, are strong and continue to adapt successfully to meet emerging challenges. Former adversaries, like Russia and other former members of the Warsaw Pact, now cooperate with the United States across a range of security issues. Many in the world see the United States as the security partner of choice.

SECURITY CHALLENGES

Despite these encouraging developments, the world remains a complex and dangerous place. Amidst the great uncertainty about the future security environment, the United States faces a variety of significant challenges, such as those described below.

CROSS-BORDER CONFLICT

Some states will continue to threaten the territorial sovereignty of others in regions critical to U.S. interests. In Southwest Asia, Iraq continues to pose a threat to its neighbors and to the free flow of oil from the region. In East Asia, North Korea still poses a significant military threat in spite of its dire economic and humanitarian conditions, and its recent initial steps toward reconciliation with the outside world. Moreover, sovereignty issues and territorial disputes remain sources of tension, with the most serious potential consequences in East Asia and South Asia. Although most instances of cross-border conflict may remain small-scale in nature, the chance of escalation or the involvement of neighboring states poses increased risk. It is entirely possible that within a generation more than one aspiring regional power will have both the motivation and the means to pose a sizeable military threat to U.S. interests.

INTERNAL CONFLICT

U.S. interests are also threatened by political violence short of cross-border aggression, such as civil wars, internal aggression (e.g., by a state against its own people or by one ethnic group against another), armed uprisings, and civil disturbances. These events may spread beyond the parties initially involved, spur intervention by outside powers, affect U.S. economic interests, or put at risk the safety and well-being of American citizens in the region. Even when important U.S. interests are not directly threatened, the United States may have a humanitarian interest in protecting the safety, well-being, and freedom of the people affected.

PROLIFERATION OF DANGEROUS MILITARY TECHNOLOGIES

The proliferation of advanced weapons and technologies with military or terrorist uses, including NBC weapons and their means of delivery, will continue despite the best efforts of the international community. These weapons and technologies pose a threat to the United States and are a source of instability in regions of critical importance. The continued spread of these weapons and technology would heighten these dangers and increase the number of potential adversaries with significant military capabilities, including smaller states and parties hostile to the United States. Adversaries may be tempted to use these weapons and technologies as an asymmetric means of neutralizing the United States' current overwhelming advantage in conventional military capability.

Of particular concern is the growing threat of a ballistic missile attack on the United States and its key allies and partners. Countries such as North Korea seek to develop and export long-range ballistic missile capabilities. Moreover, the possibility of an accidental or unauthorized launch from Russia or China remains a concern, albeit an unlikely one.

TRANSNATIONAL THREATS

The number of actors that can affect U.S. security and the stability of the international community is likely to continue growing in the years ahead. Terrorists capable of increased levels of violence, for example, can

directly threaten American lives and institutions and seek to undermine U.S. policies and alliances. Terrorist attacks could include conventional weapons, information operations, or even weapons of mass destruction, and are likely to be increasingly sophisticated in targeting, propaganda, and political operations. These attacks might be undertaken with state backing (potentially in response to conventional conflict with the United States elsewhere in the world), or independently by terrorist groups lacking formal structure or allegiance. In addition, U.S. interests can also be threatened by the illegal drug trade, international organized crime, piracy, and attempts to deny U.S. access to vital energy supplies and key strategic resources.

HUMANITARIAN DISASTERS

Failed states, famines, uncontrolled migration, and other natural or man-made disasters will continue to occur, at times affecting U.S. interests and requiring the unique capabilities of U.S. military forces to provide stability, disaster relief, and other forms of emergency assistance until agencies and organizations can bring their resources to bear.

ADDITIONAL SECURITY CONCERNS

GREAT POWER/PEER COMPETITOR

The United States faces no global rival today, nor is one likely to emerge for the foreseeable future. Over the long-term, however, a regional great power or global peer competitor could arise. China and Russia appear to have the potential to be such competitors, although their respective futures remain quite uncertain. China's economy has grown rapidly, and the People's Liberation Army continues to modernize and increase its capability. China already has a strategic nuclear arsenal that, while not large, can reach the continental United States. It is not clear, however, whether China will pursue a path that is inimical to U.S. interests. Moreover, China is likely to continue to face a number of internal economic and political challenges that may slow the pace of its military modernization.

Russia could, in the years ahead, reestablish its capability to project large-scale offensive military forces along its periphery, but this would require substantial preparation that would be visible to the United States. While Russia continues to retain a large nuclear arsenal with significant numbers of both tactical and strategic weapons, its conventional military capabilities—both in terms of power projection and combat sustainability—have weakened significantly. Russia's future will depend in large measure on its ability to develop its economy, which in turn is dependent upon a stable internal political environment. Should Russia's political system fail to stabilize over the long-term, the inability of central authorities to maintain a coherent state could pose major security challenges for the United States and the international community.

WILD CARD SCENARIOS

There is also the possibility that unpredictable wild card scenarios may arise that could seriously challenge U.S. interests at home and abroad. Such scenarios could include the unanticipated emergence of new technological threats, the loss of U.S. access to critical facilities and lines of communication in key regions, or the takeover of friendly regimes by hostile parties. While the probability of any given wild card scenario is low, the probability that at least one will occur is much higher, with consequences that could be disproportionately high. Therefore, the United States must maintain military capabilities with sufficient flexibility to deal with such unexpected events.

THE IMPERATIVE OF ENGAGEMENT

Finally, it is important to note that this overview of the security environment rests on two fundamental assumptions: that the United States will remain politically, diplomatically, economically, and militarily engaged in the world for the foreseeable future, and that it will maintain its capability as a world-class military power. If the United States were to withdraw from its international commitments, relinquish its diplomatic leadership, or forfeit its military preeminence, the world would become an even more dangerous place, and the threats to the United States, its Allies, friends, and interests would be even more severe.

THE PRESIDENT'S NATIONAL SECURITY STRATEGY

Given the challenges and opportunities of the security environment, the Administration has developed a National Security Strategy to promote and defend U.S. global interests. The United States will remain engaged abroad, supporting efforts to enlarge the community of secure, free-market, and democratic nations and to create new partners in peace and prosperity. While the United States will retain the capability to act unilaterally when necessary, this strategy recognizes that it is in the country's interest whenever possible to act in coalition with partner nations to protect and promote U.S. national goals and create preferred international conditions. Indeed, the nature of the challenges the nation faces demands cooperative, multinational approaches that distribute the burden of responsibility among like-minded states. For example, to curb the proliferation of NBC weapons, the United States must garner the cooperation of other nations that share U.S. nonproliferation goals, as well as of key suppliers and transshipment states. Therefore, it is imperative that the United States strives to build close, cooperative relations around the world.

Maintaining a strong military and the willingness to use it in defense of national interests remains essential to a strategy of engagement. Today, the United States has unparalleled military capabilities. As the only nation in the world able to organize, lead, and conduct large-scale, effective, joint military operations far beyond its borders, the United States is in a unique position. This role serves as the cornerstone of many mutually beneficial alliances and security partnerships and the foundation of stability in key regions of the world. To sustain this position of leadership, the United States must maintain ready and versatile forces capable of conducting a wide range of military activities and operations—from deterring and defeating large-scale, cross-border aggression, to participating in smaller-scale contingencies (SSCs), to dealing with transnational threats like terrorism.

Nevertheless, U.S. national interests and limited resources argue for the selective use of U.S. forces. Decisions about whether and when to use military forces should be guided, first and foremost, by the U.S. national interests at stake—be they vital, important, or humanitarian in nature—and by whether the costs and risks of a particular military involvement are commensurate with those interests. When the interests at stake are vital—that is, when they are of broad, overriding importance to the survival, security, and vitality of the nation—the United States will do whatever it takes to defend them, including, when necessary, the unilateral use of military power. U.S. vital national interests include:

- Protecting the physical security of U.S. territory, and that of U.S. Allies and friends.
- Protecting the safety of U.S. citizens, at home and abroad.

- Protecting the economic well-being of U.S. society.
- Protecting U.S. critical infrastructures—including energy, banking and finance, telecommunications, transportation, water systems, government and emergency services—from disruption intended to cripple their operation.

In other cases, the interests at stake may be important but not vital—that is, they do not affect the nation’s survival but do significantly affect the national well-being and the character of the world in which Americans live. Important national interests may include regions where America holds a significant economic or political stake, protecting the global environment from severe harm, infrastructure disruptions that destabilize but do not cripple smooth economic activity, and crises with a potential to cause destabilizing economic or humanitarian movement. Use of the military to further these interests should be both selective and limited, reflecting the importance of the U.S. interests at stake. Wherever possible, the United States will seek to avert conflict or relieve humanitarian disasters through diplomacy and cooperation with a wide range of partners, including other governments, international institutions, and non-governmental organizations.

When the interests at stake are primarily humanitarian in nature, the decision to commit U.S. military forces will depend on the magnitude of the suffering, the ability of U.S. military forces to alleviate this suffering, and the expected cost to the United States both in terms of American lives and materiel, and in terms of limitations on the United States’ ability to respond to other crises. Military forces will be committed only if other means have been exhausted or are judged inadequate.

An essential consideration in all cases involving the potential commitment of U.S. forces is to determine whether the associated costs and risks are commensurate with the U.S. interests at stake. Such decisions also require identification of a clear mission, the desired end state of the situation, and a strategy for withdrawal once goals are achieved.

THE DEFENSE STRATEGY

To support the imperative of engagement set forth in the National Security Strategy, the Department of Defense in 1997 adopted a national defense strategy with three essential elements: shaping the international security environment in ways favorable to U.S. interests, responding to the full spectrum of crises when directed, and preparing now to meet the challenges of an uncertain future.

SHAPING THE INTERNATIONAL ENVIRONMENT

In addition to other instruments of national power, such as diplomacy and economic trade and investment, the Department of Defense plays an essential role in shaping the international security environment in ways that promote and protect U.S. national interests. The Department employs a wide variety of means to carry out shaping activities including:

- Forces permanently stationed abroad.
- Forces rotationally deployed overseas.

- Forces deployed temporarily for exercises, combined training, or military-to-military interactions.
- Programs such as defense cooperation, security cooperation (e.g., the International Military Education and Training and Foreign Military Sales programs), and international arms cooperation.
- Humanitarian and civic assistance activities provided in conjunction with military operations and exercises.
- Regional centers for security studies (of which there are now five: the George C. Marshall European Center for Security Studies, the Asia Pacific Center for Security Studies, the Center for Hemispheric Defense Studies, the Africa Center for Strategic Studies, and the Near East-South Asia Center for Strategic Studies) that promote dialogue and provide training in civilian control of the military, conflict resolution, and sound defense resource management for foreign military and civilian officials.

Relatively small and timely investments in such activities can yield disproportionate benefits in terms of limiting or preventing crises, often mitigating the need for a more substantial and costly U.S. response later. These activities shape the international security environment in three main ways.

PROMOTING REGIONAL STABILITY

The Department of Defense promotes regional stability by reassuring friends and Allies of U.S. commitment, facilitating regional cooperation, supporting democratization, and enhancing transparency. The U.S. military can play a significant role in promoting stability by facilitating cooperation between potential regional rivals. Participation in multilateral alliances with the United States, for example, requires potential rivals to cooperate with each other on several military and political levels, contributing to mutual transparency, trust, and confidence-building. Where multilateral security arrangements are not involved, the United States can make use of its bilateral security relationships with potential rivals to encourage cooperation and act as an honest broker. Military contacts can also promote democratization through formal education and training exchanges and by the example the United States military sets in operating under civilian control. In addition, military contacts can help shape the security environment by increasing transparency and mutual understanding about national defense organizations and decision making processes.

PREVENTING OR REDUCING CONFLICTS AND OTHER THREATS

The Department of Defense prevents conflicts and other threats by limiting the spread of dangerous military technologies, combating transnational threats, and providing security reassurance.

Limiting the Spread of Dangerous Military Technologies. DoD limits the spread of dangerous military technologies, both through efforts to reduce or eliminate NBC capabilities and through activities to prevent NBC and missile technology proliferation. Examples of these efforts include the U.S.-North Korean Agreed Framework, the Cooperative Threat Reduction program with Russia, Ukraine, Kazakhstan, and other New Independent States of Eurasia, the Chemical Weapons Convention, and DoD efforts to monitor

and support agreements like the Nuclear Non-Proliferation Treaty and the Missile Technology Control Regime.

Combating Transnational Threats. DoD combats transnational threats through its activities to prevent terrorism, reduce U.S. vulnerability to terrorist acts, and decrease the production and flow to the United States of illegal drugs. Such activities include efforts to enhance intelligence collection capabilities, protect critical infrastructure (including combating cyber-terrorism), support joint interagency counterdrug task forces operating overseas and in international air and sea space contiguous to U.S. borders, and support to U.S. and host nation drug law enforcement agencies. Pursuant to the National Drug Control Strategy, DoD makes a substantial commitment of approximately \$1 billion per year to support counterdrug operations, and is the lead U.S. agency in source and transit areas for counterdrug detection and monitoring activities.

Providing Security Reassurance. The presence of U.S. military forces overseas, including preventive deployments of U.S. military personnel, provides reassurance that the United States is committed to peace and security in that region, and to reducing the likelihood of conflict by demonstrating resolve and lowering tensions.

DETECTING AGGRESSION AND COERCION

A vital aspect of the military's role in shaping the international security environment is deterring aggression and coercion in key regions of the world on a daily basis. The United States' ability to deter potential adversaries in peacetime depends on several factors:

- A declaratory policy and overseas presence that effectively communicate U.S. security interests and commitments throughout the world.
- A demonstrated will to uphold U.S. security commitments when and where they are challenged.
- Conventional warfighting capabilities credible across the full spectrum of military operations, including both forces forward deployed and forces rapidly deployable on a global scale.
- A demonstrated ability to form and lead effective military coalitions.

The U.S. nuclear posture also contributes substantially to the ability to deter aggression against the United States, its forces abroad, and its Allies and friends. Although the likelihood of global nuclear war has been reduced, nuclear weapons remain important as a response to threats or use of NBC weapons against U.S. interests. Nuclear weapons also serve as a means of upholding U.S. security commitments to U.S. Allies, as a disincentive to those who would contemplate developing or otherwise acquiring their own nuclear weapons, and as a hedge against an uncertain future. The United States will continue to maintain the capacity to retaliate against those who might contemplate the use of NBC weapons, so that the consequences of such use would outweigh any conceivable gains. U.S. nuclear forces based in Europe and committed to NATO, for instance, provide an essential underpinning for the transatlantic link and permit widespread European participation in all aspects of the Alliance's nuclear role. For the foreseeable future, the United States will retain a robust triad of nuclear forces—based on flexible and survivable strategic systems—under stringent command and control safeguards against accidental or unauthorized use. The

Department believes these goals can be achieved at lower force levels and continues to take the lead in exploring new arms reduction opportunities.

RESPONDING TO THE FULL SPECTRUM OF CRISES

Despite the Department's best efforts to shape the international security environment, the U.S. military will, at times, be called upon to respond to crises in order to protect national interests, demonstrate U.S. resolve, and reaffirm the nation's role as a global leader. Therefore, U.S. forces must also be able—either unilaterally or as part of a coalition—to execute the full spectrum of military operations, from deterring an adversary's aggression or coercion in crisis to conducting concurrent SSC operations to fighting and winning major theater wars.

DETERRING AGGRESSION AND COERCION IN CRISIS

In many cases, the first response to a crisis consists of efforts to deter an adversary so as to contain the situation and preclude the need for a more forceful intervention. Deterrence in a crisis generally involves signaling the United States' commitment or expressing its national interest by enhancing U.S. warfighting capability in the region. The United States' ability to respond rapidly and substantially as a crisis develops can have a significant deterrent effect. Flexible deterrent options available to the United States include diplomatic, economic, informational, and military actions. Military flexible deterrent options include increasing the readiness levels of deployable forces, moving forces deployed in the area closer to the crisis, and rapidly deploying forces from the United States to the area. The United States may also choose to make declaratory statements to communicate its intentions and emphasize to an adversary the costs of aggression or coercion. In some cases, the United States may choose to employ its forces in a limited manner (e.g., to enforce sanctions or conduct limited strikes) to underline this message and deter further adventurism.

CONDUCTING SMALLER-SCALE CONTINGENCY (SSC) OPERATIONS

In cases where deterrence fails and conflict erupts, the timely involvement of military forces can help contain, resolve, or mitigate the consequences. Such operations encompass the full range of joint/combined military operations beyond peacetime engagement activities but short of major theater warfare. Examples include show-of-force operations, coercive campaigns, limited strikes, noncombatant evacuation operations, no-fly zone enforcement, maritime sanctions enforcement, operations to address a mass migration, counterterrorism operations, peace operations, counterdrug operations, foreign humanitarian assistance, disaster relief, and emergency operations overseas in support of other U.S. government agencies.

Selective participation in SSC operations can serve a variety of U.S. interests, such as protecting U.S. citizens caught in harm's way, supporting democracy where it is threatened, or restoring stability in a critical region. In addition, when an aggressor state defies the community of nations and threatens common interests, the United States may use its military capabilities—for instance, through sanctions enforcement or limited strikes—to help enforce the international community's will and deter further coercion. Furthermore, when natural disaster strikes at home or abroad, U.S. values and interests might call for the use of the unique capabilities of military forces to initiate relief efforts, enabling other elements of the U.S. government or international community to provide longer-term relief.

U.S. military participation in SSC operations will be selective, depending on the interests at stake, the likelihood of success, the costs and risks of involvement, and the option of using other elements of national power. Based on recent experience and intelligence projections, the demand for SSC operations is expected to remain high and will likely continue to pose the most frequent challenge for U.S. forces for the foreseeable future.

FIGHTING AND WINNING MAJOR THEATER WARS

Fighting and winning major theater wars is the most stressing requirement for U.S. forces. In order to protect American interests around the globe, U.S. forces must continue to be able to overmatch the military power of regional states with interests hostile to the United States. Such states are often capable of fielding sizable military forces that can cause serious imbalances in military power within regions important to the United States. Some states possess NBC weapons that they may attempt to use to intimidate neighbors or deter U.S. or international intervention. To deter aggression, prevent coercion of allied or friendly governments, and defeat aggression should it occur, the United States must prepare military forces to confront this scale of threat far from home, in concert with Allies and friends, but unilaterally if necessary. Toward this end, the United States must maintain jointly trained and interoperable forces that can deploy quickly from a posture of global engagement across great distances to supplement forward-stationed and forward-deployed U.S. forces, to assist a threatened nation or ally, rapidly stop enemy aggression, and defeat an aggressor, including in an environment of nuclear, biological, or chemical weapons threat or use.

As a global power with worldwide interests, it is imperative that the United States be able to deter and defeat nearly simultaneous large-scale, cross-border aggression in two distant theaters in overlapping time frames, preferably in concert with regional Allies. Maintaining this capability is central to credibly deterring an aggressor in one region from being tempted to take advantage when U.S. forces are heavily committed elsewhere. It is also central to ensuring that the United States has sufficient military capabilities to deter or defeat aggression by an adversary that is larger, or under circumstances that are more difficult than expected. This is particularly important in a constantly evolving and unpredictable security environment. The United States can never know with certainty when or where the next major military challenge will occur, who the next adversary will be, how an enemy will fight, who will join in a coalition, or precisely what demands will be placed on U.S. forces.

This capability also reassures U.S. Allies, makes coalition relationships with the United States more attractive and enduring, and gives the United States greater influence and access in shaping the global security environment. This, in turn, promotes stability and prevents threats of major war from developing. Without this capability, the United States could be inhibited from responding to a crisis in a single region promptly enough, or even at all, for fear of committing its only forces and thereby making itself vulnerable in other regions of the world.

If the security environment were to change dramatically or threats of large-scale aggression were to change significantly, it would be both prudent and appropriate for the United States to review and reappraise its strategy and warfighting requirements. Such a reappraisal must recognize that the security environment remains dynamic and uncertain and that the United States must maintain sufficient military capabilities to be able to deter or respond to the full spectrum of potential challenges to U.S. interests.

PREPARING NOW FOR AN UNCERTAIN FUTURE

U.S. forces must be able to meet the immediate challenges of a dangerous world through shaping activities and responding to crises, while at the same time building the capabilities necessary to shape and respond effectively in the future. In the face of evolving threats and challenges, the United States must maintain its military superiority as a means of achieving its objective of creating an international environment that is peaceful, prosperous, and compatible with U.S. interests and ideals.

Acquiring superior technology and exploiting it to the fullest is key to maintaining superior forces. Fully utilizing the advantages that technology affords will require the adoption of new approaches to warfare—including new operational concepts as well as new organizational structures. To maintain this superiority, the United States must also continue to improve its ability to conduct joint and combined operations. This ability can only be achieved through a unified effort by all elements of the Department toward the common goal of full-spectrum dominance envisioned in *Joint Vision 2020*, the Chairman of the Joint Chiefs of Staff's conceptual blueprint for future military operations. Implementing *Joint Vision 2020* requires developing the doctrine, organization, training, education, materiel, leadership, personnel, and facilities to support truly integrated joint operations. Achieving this new level of proficiency also requires improving the U.S. military's methods for integrating its forces and capabilities with those of its Allies and coalition partners.

The Department's commitment to preparing now for an uncertain future has four main parts:

- A focused modernization effort aimed at replacing aging systems and incorporating cutting-edge technologies into the force to ensure continued U.S. military superiority.
- Continuing to pursue the Revolution in Military Affairs in order to improve the U.S. military's ability to perform near-term missions and meet future challenges.
- Exploiting the Revolution in Business Affairs to radically reengineer DoD infrastructure and support activities.
- Hedging against unlikely, but significant, threats in order to manage risk in a resource-constrained environment and better position the Department to respond in a timely and effective manner to new threats as they emerge.

FOCUSED MODERNIZATION EFFORTS

Fielding modern and capable forces in the future requires aggressive action today. Just as U.S. forces won the Gulf War with weapons developed many years before, U.S. forces in the future will fight with weapons developed today and fielded over the next several years. The Department's equipment inventory is aging, with many weapons systems and platforms purchased in the 1970s and 1980s reaching the end of their useful lives over the next decade or so. In response, the Department has substantially increased procurement spending to ensure that tomorrow's forces are even more modern and capable than today's, and to retain the capability to dominate across the full spectrum of military operations.

PURSUING THE REVOLUTION IN MILITARY AFFAIRS

The U.S. military's modernization effort is directly linked to the broader challenge of transforming its forces to retain military superiority in the face of changes in the nature of warfare. Just as earlier technological revolutions affected the character of conflict, so too will the dramatic technological change ongoing today. This transformation involves not only acquiring new military systems, but also developing the advanced concepts, doctrine, and organizations necessary to operate these new systems to their fullest advantage in dominating any future battlefield. DoD will continue to foster both a culture and a capability to develop and exploit new concepts and technologies with the potential to make U.S. military forces more effective. Part III describes in detail the Department's strategy and activities toward transforming its military forces through the Revolution in Military Affairs.

EXPLOITING THE REVOLUTION IN BUSINESS AFFAIRS

A Revolution in Business Affairs is also in progress. Efforts to reengineer the Department's infrastructure and business practices must parallel the Revolution in Military Affairs if the nation is to afford adequate investment in preparations for the future. Measures are aimed at shortening the procurement cycle, particularly for mature systems; enhancing program stability; conserving scarce resources; ensuring that acquired capabilities will support desired mission outcomes; ensuring that critical infrastructures deliver the right services to the right users at the right time; increasing efficiencies; and ensuring management focus on core competencies, while freeing resources for investment in high-priority areas.

These measures will require changes in political and public thinking about DoD infrastructure. This thinking must be flexible, open to new solutions, and focused on the bottom line—support for U.S. forces. New work must be done to radically reengineer the Department's institutions. Building the forces envisioned in *Joint Vision 2020* will require that DoD develop additional programs beyond those currently planned. To afford new programs, the Department will need both the vision and the will to shrink its supporting infrastructure and make it dramatically more efficient. Efforts to transform the Department are covered in more detail in Part IV.

HEDGING AGAINST UNLIKELY BUT SIGNIFICANT FUTURE THREATS

The Department must also take steps today to be able to respond more effectively to unlikely or unanticipated, but significant, future threats, such as the early emergence of a regional great power or a wild card scenario. The Department will focus these efforts on threats that, although unlikely, would have highly negative consequences that would be very expensive to counter. Although such insurance is certainly not free, there are relatively inexpensive ways to manage the risk of being unprepared to meet a new threat, of developing the wrong capabilities, or of having a capability become obsolete by the time it is needed. Such an approach can also help identify costly investments in future capabilities that the United States may not need.

Examples of critical hedging activities are maintaining a broad research and development (R&D) effort, using advanced concept technology demonstrations, continuing contact with industries developing new technologies, and cooperating with Allies in developing new approaches to resolving problems. Hedging against the emergence of new threats also requires ensuring that the U.S. military has the necessary intelligence capabilities for long-term strategic indications and warning.

REGIONAL APPLICATIONS OF THE STRATEGY

The Department of Defense undertakes activities around the world in an effort to secure U.S. national security interests. Each region presents its own unique opportunities and challenges, and the Department's strategies for dealing with these regional challenges are critical to its overall effort to shape the international environment and remain prepared to respond to the full range of crises. Indeed, how the United States uses its forces sends a clear signal to friends and foes throughout the world about its interests, influence, and values.

EUROPE

U.S. DEFENSE OBJECTIVES

U.S. defense efforts in Europe are aimed at encouraging the development of a Europe that is secure and undivided, that has stable democratic governments, prosperous and increasingly integrated market economies, rule of law, respect for human rights, and lasting reconciliation between former enemies. The security of the United States is inextricably tied to that of Europe, and NATO is the premier institution to ensure the collective defense of the United States and its European allies. NATO is also the leading institution for crisis management operations that involve a significant threat to European security and stability. The United States will continue to work with European allies and partners to counter drug-trafficking, terrorism, and the threat of NBC weapons and associated delivery systems.

U.S. REGIONAL DEFENSE POSTURE AND ACTIVITIES

The presence of significant and highly capable U.S. military forces in Europe continues to play a critical role. They are one of the essential instruments by which the United States makes manifest its continued commitment to the security of Europe. They underwrite America's national strategy of engagement and protect vital interests and lines of communication in Europe and beyond. U.S. forces stationed in Europe—combined with frequent temporary deployments of U.S.-based personnel for exercise, training, and crisis response purposes—ensure that the United States will always have the means to meet its treaty commitments to NATO. They also underscore the United States' national will to deter or defeat aggression and prevail in crisis management operations.

To ensure transatlantic security in the future, the United States and its Allies must improve defense capabilities in the fields most relevant to modern warfare. The experience of the Kosovo crisis reinforced the need for more mobile, sustainable, and flexible forces to engage effectively in a wide variety of situations. Through NATO's Defense Capabilities Initiative, the United States is moving to address these requirements, and other Alliance members must also do their share. Although there have already been important procedural and national successes, key deficiencies remain in the areas of intelligence, surveillance and reconnaissance (ISR) assets, strategic lift, air-to-air refueling, suppression of enemy air defenses, support jamming, precision-guided munitions, defense against biological weapons, and secure communications.

The United States welcomes European efforts to increase their contribution to collective defense and crisis management operations within NATO, and to build a capability to act militarily under the European Union (EU) where NATO as a whole is not engaged. The development of European capabilities should not, however, challenge the core NATO mission of, and responsibility for, collective defense. The United States

also remains strongly supportive of NATO's open door policy toward potential new members, and is working both bilaterally and multilaterally, through the Partnership for Peace (PfP) and Membership Action Plan (MAP), to assist those countries aspiring to join NATO to become the strongest possible candidates for membership. An enhanced and more operational Partnership for Peace continues to provide for a wide range of practical cooperation between the 19 NATO members and 26 PfP partners, and partners have assumed an active and important role in supporting NATO-led peacekeeping operations in the Balkans. The MAP is a structured process launched at the 1999 Washington Summit to prepare aspiring nations for possible NATO membership. There are currently nine nations participating in the MAP.

Through its active involvement in the Southeastern Europe Defense Ministerial process and NATO's Southeastern Europe Initiative, the United States is fostering cooperative structures involving Allies and partners that, over time, can make significant contributions to increasing security and stability in the region. These programs promote practical steps ranging from strengthening multilateral peace support capabilities to improving information-sharing networks and military engineering skills in support of broader civil-military emergency planning and response. In addition, cooperation on the issue of accounting for missing American service personnel fosters trust and confidence between the United States and the countries of Central Europe.

THE NEW INDEPENDENT STATES

U.S. DEFENSE OBJECTIVES

The United States seeks the development of Russia, Ukraine, and the other New Independent States (NIS) of Eurasia into stable market democracies fully integrated into the international community and cooperative partners in promoting regional security and stability, arms control, and counterproliferation. Integral to this goal is U.S. support of efforts to secure and stem the proliferation risk posed by weapons of mass destruction (WMD), weapons materials, and associated delivery systems or technologies. DoD supports these efforts in part by working with the NIS to eliminate WMD, control the materials and technology to produce them, and advance indigenous capabilities to secure borders against their unauthorized shipment. Integral to promoting regional security and stability is U.S. defense and military cooperation with the armed forces of the NIS, which seeks to reinforce their ongoing processes of restructuring and reform. The United States wants to establish a stable partnership with Russia that seeks and supports Russia playing a constructive role in European affairs, as exemplified by Russia's role in peacekeeping operations in Bosnia and Kosovo. The United States wants to develop further the NATO-Russian partnership, as well as the NATO-Ukraine partnership promoting Ukraine's integration into European and Euro-Atlantic institutions. The United States also seeks a peaceful resolution to the ethnic and regional tensions throughout the NIS, particularly in the Caucasus and Central Asia, and enhanced cooperation in the fight against illegal weapons and drug trafficking, terrorism, international organized crime, and environmental degradation.

U.S. REGIONAL DEFENSE POSTURE AND ACTIVITIES

The Department of Defense contributes substantially to overarching U.S. security objectives in the region. In its bilateral foreign military exchanges with the NIS, the Department seeks to improve operational cooperation with their armed forces and to instill the principles of civilian leadership, sound defense resource management, sufficiency and transparency, and military reform and restructuring into NIS defense decision making. Such military interactions help overcome the mutual distrust and suspicion that

are a legacy of the Cold War and create the basis for interoperability between U.S. and NIS armed forces. These bilateral efforts are complemented by multinational efforts, including those conducted through the Partnership for Peace program, the Organization for Security and Cooperation in Europe, and other organizations. The Joint Contact Team Program, State Partnership Program, and the Marshall Center are key programs that support this effort. The Department will continue to broaden military and civilian defense contacts; support the enhanced security for and dismantlement of Russian weapons of mass destruction and associated facilities; and conduct, bilaterally and as part of NATO, combined training and exercises with the New Independent States to strengthen their interoperability with NATO and improve their capabilities for multinational operations. Continued cooperation on efforts to account for missing American service personnel also remains a high-priority issue in the bilateral relationships between the United States and the New Independent States.

EAST ASIA AND THE PACIFIC RIM

U.S. DEFENSE OBJECTIVES

The United States seeks a stable and economically prosperous East Asia that embraces democracy and market economics. Central to achieving this goal are the United States' strong alliance relationships within the region, especially with Japan, the Republic of Korea (ROK) and Australia. In addition, continued engagement with China is critical to promoting regional stability and encouraging it to act as a responsible member of the international community. The United States desires a peaceful resolution of the Korean conflict resulting in a non-nuclear, democratic, reconciled, and ultimately reunified peninsula, as well as the peaceful resolution of the region's other disputes, including that between Taiwan and the People's Republic of China. Successful counters to terrorism, illegal drug trafficking, and NBC weapons and delivery systems are also major U.S. goals for the region. Finally, the United States continues to experience success in its efforts to recover remains of Americans still unaccounted for from past conflicts in East Asia and the Pacific Rim, including World War II, Korea, and Vietnam.

U.S. REGIONAL DEFENSE POSTURE AND ACTIVITIES

The United States is committed to maintaining significant and highly capable forces in East Asia and the Pacific Rim. This allows the United States to play a key role as regional balancer and security guarantor to Allies. The United States will continue a forward presence policy, in cooperation with its Allies, that reflects its interests in the region. Today, roughly half of the U.S. forces in the region are stationed in Japan, and close to 40 percent are stationed in the ROK. The United States will seek to continue and build upon bilateral and multilateral exercises with key states in the region, including Japan, the ROK, Australia, Thailand, the Philippines, and Singapore.

The United States is encouraged by the progress made in cooperative engagement between the ROK and the Democratic People's Republic of Korea (DPRK)—notably the inter-Korean summit in June 2000 and its follow-on initiatives of senior official visits, family reunions, and a pledge for further cooperation. In spite of these positive developments, the military threat posed by the DPRK continues and the United States remains committed to its treaty obligations to assist in the defense of the ROK in the event of North Korean aggression. The United States continues to work with regional Allies, partners, and friends toward a shared goal of a Korean peninsula free of NBC weapons. The U.S.-North Korean Agreed Framework remains a critical tool for ensuring North Korean compliance with its commitment under the Nuclear Non-Proliferation Treaty. The Department recognizes the humanitarian cooperation of the DPRK in allowing

U.S. military personnel and aircraft into North Korea to conduct full-scale joint recovery operations to recover and repatriate the remains of U.S. servicemen lost there during the war.

The U.S.-Japan alliance is the linchpin of U.S. security strategy in Asia. Both nations have moved actively in recent years to update the framework and structure of joint cooperation and strengthen the bilateral relationship. U.S. efforts to build on strong alliances with other nations in the region, especially Australia, buttress the U.S. goal of ensuring stability in Southeast Asia, an area of growing economic and political importance. The bi-annual Keen Sword/Keen Edge exercise series in Japan improves command, control, interoperability, and readiness between Japanese and American forces. The continued strengthening of U.S. security dialogues and confidence-building measures with the members of the Association of Southeast Asian Nations (ASEAN) through the ASEAN Regional Forum is one of many ways the United States is working to enhance political, military, and economic ties with Allies and friends in Southeast Asia. The Asia-Pacific Center for Security Studies is a key U.S. initiative that promotes mutual understanding and cooperation by providing an academic forum for military and civilian decision makers from the United States and Asia to exchange ideas and explore regional security challenges.

The 1997 Asian financial crisis shook the region's assumptions about uninterrupted economic development. Indonesia's economic and political difficulties in particular will pose challenges to the established order both internally and in the region. The United States engages broadly with Indonesia to promote that country's democratic and market-based economic development, including increased civilian control of the military.

Because of China's critical importance in the Asia-Pacific region, the United States is working to integrate China more deeply into the international community. Specifically, the United States engages China in order to promote regional stability and economic prosperity while securing China's adherence to international standards on weapons nonproliferation, international trade, and human rights. The United States also seeks greater transparency in China's defense program, including its planning and procurement processes, and will continue to engage China in dialogue aimed at fostering cooperation and confidence-building. Military exchange programs, ship visits, and professional seminars contribute to this dialogue and are aimed at building lasting relationships that will foster cooperation and build confidence among U.S. and Chinese leaders.

THE MIDDLE EAST AND SOUTH ASIA

U.S. DEFENSE OBJECTIVES

The United States seeks a Middle East and South Asia at peace, where access to strategic natural resources at stable prices is unhindered, where no hostile power is able to exercise de facto hegemony, and where free markets are expanding. The region cannot be stable until there is a just, lasting, and comprehensive peace between Arabs and Israelis and a peaceful resolution to Indian-Pakistani disputes. Stability also cannot be achieved until Iraq, Iran, and Libya abide by international norms and no longer threaten regional security. The continuing proliferation in the region of NBC weapons and long-range missiles, particularly in the hands of states of concern, is inherently destabilizing and must be brought under control. Stability in South Asia also depends on improved relations between India and Pakistan and restraint on the part of both countries in their military confrontation, particularly with respect to their missile and NBC weapons policies and practices. Developing successful counters to terrorism is also a major objective for the region.

U.S. REGIONAL DEFENSE POSTURE AND ACTIVITIES

The United States military presence in the Middle East includes a limited long-term presence and a larger number of rotational and temporarily deployed forces. An average of approximately 20,000 U.S. military personnel, as well as prepositioned critical materiel, are in the region to deter aggression and promote stability. These forces enforce United Nations resolutions, deter aggression by hostile states, ensure the free flow of commerce, and work with regional partners to improve interoperability and regional nations' individual and collective self-defense capabilities. The close military relationships developed with friends throughout the Middle East, complemented by U.S. security assistance programs, contribute to an environment that fosters military cooperation among regional states and increases their ability to more readily and effectively support U.S. crisis response deployments.

The United States' vital interests in the security and stability of the Middle East and its unique military and political position give the United States an indispensable role in promoting regional stability and advancing the cause of peace. In conjunction with diplomatic efforts, the U.S. military will continue to use military-to-military contacts as a means of promoting transparency among regional states, enhancing the professionalism of regional armed forces, and demonstrating the value of the peaceful resolution of regional conflicts. The opening of the Near East-South Asia Center for Strategic Studies will provide an important new venue in which to pursue these important goals.

The Department, through the Cooperative Defense Initiative and various multilateral processes, is working actively with regional partners to address and deter the threat or use of chemical and biological weapons and long-range missiles in the region. DoD efforts also concentrate on thwarting further proliferation of NBC technologies and successfully countering terrorism. The United States must continue working with regional Allies and improving U.S. force capabilities to ensure that U.S.-led coalition forces have the ability to fight and win in an NBC environment.

Until South Asia's nonproliferation issues are satisfactorily resolved, the U.S. military's role in the region will focus on supporting multinational efforts to stabilize the region and safeguard international nonproliferation norms. The United States will also encourage participation by regional parties, where appropriate, in peace operations to help resolve international conflicts and promote regional cooperation.

THE AMERICAS

U.S. DEFENSE OBJECTIVES

The United States desires all nations of the Western Hemisphere to be peaceful, democratic partners in economic prosperity. U.S. defense engagement seeks to promote a strong commitment among nations of the region to civilian control of their military and security forces, constructive civil-military relations, respect for human rights, the rule of law, and rational, transparent arms acquisition and military budgets. Peaceful resolution of the region's territorial disputes is particularly important.

The United States welcomes collective efforts in the region to adopt confidence and security-building measures designed to prevent misperceptions and ease bilateral tensions. Notification of military exercises, defense information sharing, exchange of exercise observers, expansion of educational programs, and increased communication in border areas can all contribute to fostering openness and inspiring confidence among neighbors in the hemisphere. The United States also supports efforts in some regions, such as the

Southern Cone, to move beyond confidence and security-building measures to implement normal defense cooperation measures ranging from joint exercises to the possibility of cooperative defense acquisition. Additionally, the United States is committed to maintaining the neutrality of the Panama Canal and freedom of navigation along the region's sea lines of communication.

Finally, the United States and nations of this hemisphere share an interest in developing successful counters to transnational threats such as illicit narcotics cultivation, production, and trafficking; arms trafficking; terrorism; organized crime; and illegal migration and refugee flows in the region. Colombia is the strategic point for U.S. efforts to make a major impact on U.S. bound illegal drug traffic. Of the \$1.3 billion in supplemental funding that the United States is spending in FY 2000–2001 to support Colombian counterdrug efforts, DoD programs comprise \$154 million, or twelve percent of the total. These DoD programs will assist Colombia and its neighbors to develop counterdrug detection and interdiction capabilities.

U.S. REGIONAL DEFENSE POSTURE AND ACTIVITIES

Substantial numbers of active duty and reserve personnel from the United States pass through the Caribbean and Latin America every year to participate in combined exercises, nation assistance, counterdrug support, instruction in demining operations, and other engagement activities.

The Department expends significant energy and time in encouraging the increasing acceptance by militaries and security forces (SOUTHCOM) in the region of their appropriate role in a constitutional democracy. These efforts include the promotion of cooperative regional relationships through bilateral working groups, as well as the multilateral Defense Ministerial of the Americas. The Defense Ministerial brings together the defense ministers from the hemisphere's democracies to discuss common concerns. This fosters regional transparency, reduces suspicions, and promotes an appropriate role for the military and security forces in a democratic society.

Transnational threats are particularly troublesome in the Americas. Because illegal drug trafficking and associated criminal activity threaten the United States and its interests in the region, DoD will continue to support other agencies in trying to stop the flow of illegal drugs, both at the source and in transit. In addition, the Department will also encourage and assist other nations committed to counterdrug efforts. DoD will also continue to support other governmental agencies' efforts to control illegal migration bound for U.S. shores.

SUB-SAHARAN AFRICA

U.S. DEFENSE OBJECTIVES

The goals of U.S. defense activities in Sub-Saharan Africa are to promote regional stability and foster democratic governance. The U.S. desires that: African military services adhere to the democratic principle of civilian control of the military; African military units conduct operations and training in a professional manner, respecting internationally-recognized human rights and military conduct standards; African Ministries of Defense design and organize their military forces to correspond with legitimate self-defense requirements and effectively manage resources allocated by civil authorities; and African military organizations have the capability to conduct national self-defense and participate in sub-regional humanitarian relief operations, humanitarian MIA accounting missions, and peace operations.

U.S. DEFENSE POSTURE AND ACTIVITIES

To achieve these objectives, the Department of Defense actively engages sub-regional organizations; develops partnerships with key sub-Saharan African states; engages problem states, as appropriate; cooperates and coordinates with allied programs and initiatives; strengthens African strategic leadership; prepares prudently for possible contingencies; and, when necessary, responds decisively. U.S. regional defense resources for sub-Saharan Africa, however, are limited. To manage scarce resources effectively, the Department prioritizes programs and activities in relation to African partners' stability and relative importance to U.S. national interests. Countries receive appropriate resources, activities, or programs that fall in one or more of the following categories: defense reform, military professionalism, conflict resolution and peace operations, technology, and health and environment. Activities and resources include military education and training programs, combined exercises, peace operations training, and humanitarian and civic action programs. In this way, the Department of Defense tailors its activities to support United States security objectives and develop African partnerships where professionalism, self-defense, and respect for civilian control are the norms. In addition, the Africa Center for Strategic Studies, launched in 1999, is a critical new element of U.S. engagement in Africa. The Center conducts seminars focused on defense economics, civil-military relations, and national security strategy. All African nations not under sanction are invited to send senior military and civilian representatives.

CONCLUSION

The national defense strategy provides a framework for the United States to protect and promote its national interests in the current and projected security environment. To remain engaged as a global leader, the United States must use all of the elements of national power, including diplomatic, economic, and informational tools. The United States must also continue developing and taking advantage of the unmatched capabilities of U.S. forces to shape the international security environment, respond to the full spectrum of crises, and prepare now to meet the challenges of an uncertain future. The three elements of the strategy—shape, respond, and prepare—and the military missions inherent in them provide the foundation for the Department's programs and activities.

CHAPTER 2

THE MILITARY REQUIREMENTS OF THE DEFENSE STRATEGY

In order to shape the international environment and respond to the full spectrum of crises, U.S. forces must possess unmatched military capabilities to succeed in a broad range of missions and operational environments. The U.S. military is structured to give national leaders an array of viable options for promoting and protecting U.S. interests in peacetime, crisis, and war. The depth and breadth of U.S. military capabilities were demonstrated most recently in Kosovo, where U.S. forces, acting in concert with its NATO Allies and coalition partners, prevailed against a determined foe while maintaining the ability to respond to other security requirements as dictated by the defense strategy.

OVERARCHING CAPABILITIES—CHARACTERISTICS OF A FULL-SPECTRUM FORCE

The broad demands of the strategy require a full array of military capabilities from all Services—Army, Navy, Air Force, Marine Corps—and from all components—active, reserve, guard, civilian. (See Table 2-1 for a summary of major conventional force elements.) This full-spectrum force must be able to prosecute the most demanding missions, including defeating large-scale, cross-border aggression in two distant theaters nearly simultaneously, conducting the full range of smaller-scale contingency (SSC) operations, and supporting routine shaping activities.

To conduct this wide range of missions the full-spectrum force must be highly versatile, requiring the highest training and readiness standards and equipment that is effective across a range of tasks or, in certain cases, tailored to critical missions. The force must also be highly mobile and responsive, able to meet the demands of the strategy by responding to challenges in varied locations around the world. This capability requires integrated air, sea, and land transportation assets and a comprehensive set of basing, infrastructure, and access arrangements with allies and friends to enable military operations in distant locations. Where possible, it also requires prepositioned stocks and equipment in critical areas to reduce deployment times and facilitate the rapid transition to combat operations.

Major Conventional Force Elements			Table 2-1
	Active	Reserve/National Guard	
Army			
Divisions	10	8	
Armored Cavalry Regiments	2	0	
Enhanced Separate Brigades	0	14	
Navy			
Aircraft Carriers	12	0	
Attack Submarines	55	0	
Surface Combatants	108	8	
Air Force			
Fighter Wings	12+	7+	
Bombers ^a	181	27	
Marine Corps			
Divisions	3	1	
Air Wings	3	1	
^a Total inventory.			

The effective employment of this full-spectrum force rests both on the ability to maintain forward-deployed and forward-stationed forces in peacetime, and on the ability to project power quickly in crisis and war. The full-spectrum force also requires a range of enabling capabilities supporting the full array of military operations.

OVERSEAS PRESENCE

Maintaining a substantial overseas presence is vital to both the shaping and responding elements of the defense strategy. Overseas presence promotes regional stability and deters aggression and coercion by serving as a tangible manifestation of U.S. commitment to protecting its interests in the region. U.S. forces overseas also play a critical role in helping to assure access and enable the projection of joint combat power from outside the theater. By promoting joint and combined training and facilitating regional integration, overseas presence also enhances the effectiveness of coalition operations. Finally, overseas presence ensures a timely response in the event of emerging threats, and reduces the number of additional forces that might be required to be moved to the theater in the event of military conflict.

The Department continually assesses its overseas presence posture to ensure it effectively and efficiently contributes to achieving U.S. national security objectives. The aim of such assessments is to define the

right mix of permanently stationed forces, rotationally deployed forces, temporarily deployed forces, and infrastructure, in each region and globally, required to conduct the full range of military operations.

POWER PROJECTION

Equally essential to the shaping and responding elements of the strategy is the ability to rapidly move, mass, employ, and sustain U.S. military power to and within distant corners of the globe, including if necessary, the ability to establish a military lodgement on foreign territory without access to infrastructure elsewhere in the region. Effective and efficient global power projection provides the flexibility demanded by the strategy, and ultimately provides U.S. leaders with an increased range of options for responding to potential crises and conflicts. Being able to project power allows the United States to shape and respond to events in a region of interest even without permanent presence or infrastructure there.

ENABLING CAPABILITIES

Critical to the U.S. military's ability to shape the international security environment and respond to the full spectrum of crises is a host of capabilities and assets that enable the worldwide application of U.S. military power. These critical enablers include quality people, superb leadership, a globally alert intelligence system, comprehensive and secure communications, space superiority, control of the seas and airspace en route to the theater of operations, and strategic mobility. Without these critical enablers, the United States could not execute its defense strategy.

MEETING SPECIFIC REQUIREMENTS OF THE STRATEGY

In general, each of the capabilities described above is required to carry out more than one aspect of the strategy. For example, the capabilities needed to fight and win a major theater war are also important for deterrence (both on a daily basis and in crisis), and may be essential to conducting SSC operations as well. However, both shaping activities and each of the three types of crisis response—deterring aggression and coercion, conducting SSC operations, and fighting and winning major theater wars—have unique requirements of their own.

SHAPING THE SECURITY ENVIRONMENT

Promoting regional stability and preventing or reducing conflicts and threats require an effective overseas presence, participation in routine alliance activities, military-to-military exchanges, combined training and exercises, defense cooperation, security cooperation, and international arms cooperation. Deterring aggression and coercion on a day-to-day basis requires the capabilities needed to respond to the full range of crises, from smaller-scale contingencies to major theater wars, including in a nuclear, biological, chemical (NBC) environment. Deterrence also requires maintaining a sufficient nuclear force to dissuade any potential adversary from using or threatening to use NBC weapons against the United States or its allies, and to hedge against defeat of U.S. conventional forces in defense of vital interests.

Because the United States has limited resources with which to address global security challenges, the Department must prioritize its peacetime shaping activities to ensure they do not hamper U.S. war-fighting capabilities. These priorities vary by region and situation according to the national security interests involved—be they vital, important, or humanitarian—and also to the extent to which the application of DoD resources can significantly advance those interests.

Accordingly, each regional commander in chief (CINC) annually develops a Theater Engagement Plan that links planned engagement activities to prioritized regional objectives. The Theater Engagement Plan is a comprehensive multi-year plan of CINC engagement activities that has been incorporated into the Department's deliberate planning system. The Chairman of the Joint Chiefs of Staff (CJCS) reviews and integrates each theater plan into the global family of engagement plans. The CJCS forwards it to the Secretary of Defense for review and approval. This process enhances the Department's effectiveness in prioritizing, from a global perspective, the CINCs' engagement activities and the associated resource requirements and tempo considerations.

DETERRING AGGRESSION AND COERCION IN CRISIS

Deterrence in crisis requires the timely ability to increase the readiness levels of deployable forces, to move forces deployed in the area closer to the crisis, and to rapidly deploy forces from the United States to the crisis region. Deterrence also requires the ability to execute actions such as sanctions enforcement or limited strikes. Although these capabilities are required in the initial stages of responding to smaller-scale contingency operations or major theater wars, they must also exist in peacetime as means of defusing crises and precluding the need for larger interventions. The ability of U.S. forces to fight and win despite the threatened or actual use of NBC weapons also helps deter potential adversaries from acquiring or using such weapons.

CONDUCTING SMALLER-SCALE CONTINGENCY OPERATIONS

Many capabilities required for smaller-scale contingency operations are similar or identical to those required for fighting and winning major theater wars. Because of the range and unpredictability of smaller-scale contingencies, U.S. forces must be multi-mission capable and must be trained, equipped, and managed with multiple mission responsibilities in mind. Furthermore, U.S. forces must be capable of withdrawing from smaller-scale contingency operations, reconstituting, and then deploying to a major theater war within required timelines. Although in some cases this may pose significant operational, diplomatic, and political challenges, the ability to transition between SSC operations and warfighting remains a fundamental requirement for U.S. military forces.

Sustained commitment to multiple concurrent smaller-scale contingencies can be stressful to U.S. forces—for example, by creating tempo and budgetary demands on selected units—in ways that must be carefully managed. SSC operations also require the U.S. military to work effectively with other U.S. government agencies, non-governmental organizations, and a variety of coalition partners. Because of the highly complex and fluid nature of SSC operations, the U.S. government, including DoD and other agencies, must continuously reassess the challenges posed by such operations and the capabilities required to meet these challenges.

FIGHTING AND WINNING MAJOR THEATER WARS

The most stressing military requirement facing U.S. forces is the capability to fight and win two major theater wars in overlapping time frames. This requires that the U.S. military maintain a full spectrum of capabilities sufficient to defeat any two regional adversaries in full-scale warfare involving land, sea, and aerospace forces in two separate and distant theaters of conflict, with only a short period of time separating the initiation of the two conflicts.

A key challenge posed by major theater wars is the ability to defeat the offensives of both adversaries rapidly and well short of their objectives. This capability may be made even more demanding by the critical need to transition U.S. forces to fighting major theater wars from a posture of global engagement—that is, from substantial levels of peacetime engagement activities overseas and possibly from multiple concurrent SSC operations. The ability to defeat enemy offensives rapidly is essential for the United States to seize the initiative in both theaters and minimize the amount of territory to be recaptured from enemy forces. Failure to defeat an enemy offensive rapidly can make the subsequent campaign much more difficult, lengthy, and costly, and could weaken coalition support, undermine U.S. credibility, and increase the risk of conflict elsewhere.

In transitioning to respond to a major theater war and to deter the possible outbreak of a second war, the United States would need to be extremely selective in making any additional commitments either to military engagement activities or SSC operations. The United States would likely also choose to begin disengaging from those activities not deemed to involve vital U.S. interests. In the event of a second major theater war, U.S. forces would be withdrawn from peacetime engagement activities and SSC operations as quickly as possible to be readied for war. The Department continually reviews the engagement posture of U.S. forces, and, as during Operation Allied Force in Kosovo, makes adjustments as necessary to protect vital national interests within manageable levels of risk.

An additional challenge of major theater wars is the threat or use of chemical and biological weapons, a likely prospect given an adversary intent on disrupting U.S. operations and logistics. U.S. forces must continue to improve their capabilities to locate and destroy such weapons before they can be used, and, if preemption fails, to defend against and manage the consequences of their use. Capability enhancements alone are not enough. Equally important is continuing to adapt U.S. doctrine, operational concepts, training, and exercises to take full account of the threat posed by chemical and biological weapons and other asymmetric threats. Moreover, given that the United States will most likely conduct future operations in coalition with other countries, it must continue to encourage friends and allies to train and equip their forces to operate effectively in a chemical and biological environment.

CAPABILITIES TO RESPOND TO ASYMMETRIC THREATS

To be a truly full-spectrum force, the U.S. military must be able to defeat even the most innovative adversaries. Those who oppose the United States will increasingly rely on unconventional strategies and tactics to offset U.S. superiority in conventional forces. The Department's ability to adapt effectively to adversaries' asymmetric threats—such as information operations; nuclear, biological, or chemical (NBC) weapons use; ballistic missiles; and terrorism—is critical to maintaining U.S. military preeminence into the 21st century.

INFORMATION OPERATIONS

Information operations refers both to offensive actions to degrade adversary information and information systems and to defensive actions to protect one's own information and information systems. The increasing availability of technology and sophistication of potential adversaries demands that the United States continue to improve its ability to operate in the face of information threats. Defense against hostile information operations, including operations against those elements of the civilian infrastructure that

support national security requirements, requires unprecedented cooperation among Services, defense agencies, other U.S. government agencies, commercial enterprises, and U.S. allies and friends.

NUCLEAR, BIOLOGICAL, AND CHEMICAL WEAPONS

The Department has made substantial progress toward fully integrating considerations of nuclear, biological, and/or chemical weapons use against U.S. forces into its military planning, acquisition, intelligence, and international cooperation activities. This includes efforts to:

- Embed counterproliferation concerns in all aspects of the planning and programming process.
- Adapt military doctrine and operational plans to deal with NBC weapons in regional contingencies.
- Adjust acquisition programs to ensure that U.S. forces are adequately trained and equipped to operate effectively in contingencies involving NBC threats.
- Retain the capacity to defend against and respond decisively to the use of NBC weapons so that an adversary will not perceive any advantage from employing them.
- Reallocate intelligence resources to provide better information about adversary NBC capabilities and how they are likely to be used.
- Undertake multilateral and bilateral cooperative efforts with U.S. allies and friends to develop a common approach to address the military risks posed by NBC proliferation.
- Strengthen capability of military forces to assist U.S. civil authorities in dealing with NBC attacks.

In addition, in 1997, the Secretary of Defense added \$1 billion to the Future Years Defense Program for operating in a potential NBC environment, and has since directed a further increase of \$550 million for biological warfare defense, vaccines, and biological detection systems.

DoD must meet two key challenges as part of its strategy to ensure future NBC attack preparedness. It must institutionalize counterproliferation as an organizing principle in every facet of military activity, from logistics to maneuver and strike warfare. It must also internationalize those same efforts to ensure U.S. allies and potential coalition partners train, equip, and prepare their forces to support and operate with U.S. forces in NBC conditions.

To advance the institutionalization of counterproliferation, the Joint Staff, CINCs, and Services are developing a joint counterproliferation strategy that integrates both offensive and defensive measures. This strategy will serve as the basis for refining existing doctrine so that it more fully integrates all aspects of counter-NBC operations. In addition, the Services and CINCs will place greater emphasis on regular individual, unit, joint, and combined training and exercises that incorporate realistic NBC threats. The Services will work to develop new training standards for specialized units, such as logistics and medical units, and larger formations to improve their ability to perform complex tasks under prolonged NBC

conditions. In summer 2000, the Secretary of Defense directed that chemical and biological defense readiness standards be improved. The Services are developing concepts of operations and the CINCs are preparing quantitative standards to help ensure mission accomplishment in an NBC warfare environment. The Services are also working to provide for space-based NBC detection systems, prepositioning or early deployment of NBC and theater missile defense capabilities and personnel into theaters of operations. The timing necessary for the arrival of such capabilities will help determine whether or not those capabilities reside in active or reserve components.

Unless properly prepared to deal with NBC threats or attacks, allies and friends may present vulnerabilities for a U.S.-led coalition. In particular, potential coalition partners cannot depend on U.S. forces to provide passive and active defense capabilities to counter NBC threats. U.S. counterproliferation cooperation with its NATO allies through the Senior Defense Group on Proliferation provides a template for improving the preparedness of allies and other countries that may choose to act in concert with the United States in future military coalitions. Similar efforts with allies in Southwest Asia and Asia-Pacific will seek to ensure that potential coalition partners for major theater wars have effective plans for NBC defense of populations, forces, and critical nodes.

Further information on DoD's counterproliferation program can be found in two DoD publications: *Proliferation: Threat and Response* and *Department of Defense Biological and Chemical Defense Annual Report to Congress*. These and other counterproliferation documents are available on the Internet.

BALLISTIC MISSILES

A growing number of nations are working to acquire ballistic missiles, including missiles that could threaten U.S. territory. Ballistic missiles can be used to deliver nuclear, biological, or chemical weapons. The increasing availability of sophisticated technology today may enable a nation to develop or acquire, with relatively little warning time for the United States, an intercontinental range ballistic missile capability. To protect against this growing threat and deter possible adversaries from considering such attacks on American territory, the United States is engaged in a vigorous effort to develop a limited national missile defense (NMD) system. The NMD system under development would defend all 50 states against a limited strategic ballistic missile attack such as could be launched by a state of proliferation concern. This NMD system could also provide some inherent capability against a small accidental or unauthorized launch of strategic ballistic missiles from existing NBC capable states.

TERRORISM

The terrorist threat has changed markedly in recent years for a number of reasons, including: changing terrorist motivations; the proliferation of technologies of mass destruction; increased access to information and information technologies; a perception that the United States is not willing to accept casualties. As a result of the dynamic environment influencing terrorism, recently demonstrated by the attack on the *USS Cole*, the United States must continue to improve its ability to stay ahead of terrorists' increasing capabilities.

DoD's program for combating terrorism has four components: antiterrorism, counterterrorism, terrorism consequence management, and intelligence support. Antiterrorism consists of defensive measures used to reduce the vulnerability of individuals, forces, and property to terrorist acts. Counterterrorism consists of

offensive measures taken to prevent, deter, and respond to terrorism. Terrorism consequence management consists of measures to mitigate the effects of a terrorist incident, including those resulting from the use of a weapon of mass destruction. Intelligence support consists of the collection, analysis, and dissemination of all-source intelligence on terrorist groups and activities to protect, deter, preempt, or counter the terrorist threat to U.S. personnel, forces, critical infrastructures, and interests.

Many significant initiatives support DoD's antiterrorism efforts. The Department has completed interagency agreements delineating security responsibility for all non-CINC assigned personnel in 120 countries and is negotiating agreements for 33 additional countries. Joint Staff, CINC, and Service Vulnerability Assessment Teams are evaluating and improving commanders' antiterrorism programs worldwide. The Department's antiterrorism training program, which reaches all levels of DoD personnel—from individual Service members, civilian employees, and family members to senior commanders—is being refined. The Combating Terrorism Readiness Initiative Fund provides an important means for the Chairman, Joint Chiefs of Staff, to help combatant commanders meet emergency and other unforeseen high-priority requirements. The Department has established force protection standards for military construction projects and continues to exploit technology enhancements for countering terrorism, particularly in the areas of threat analysis and warning, explosive device detection, and early detection of weapons of mass destruction. Finally, Defense intelligence organizations are engaged in an aggressive effort to better alert decision makers to potential terrorist attacks, to strengthen their close working relationships with other elements of the national intelligence community, and to increase intelligence exchanges with U.S. friends and allies.

In the area of counterterrorism, U.S. armed forces possess a tailored range of options to respond to terrorism directed at U.S. citizens, interests, and property, both domestically and overseas. DoD can employ the full range of military capabilities, including rapid-response Special Operations Forces that are specifically trained, manned, and equipped to pre-empt or resolve incidents of international terrorism. DoD also continues to refine its capabilities, which have been intensively exercised with interagency counterparts.

In the area of terrorism consequence management, DoD continues to work hard to deter, and when necessary, minimize the effects of a weapons of mass destruction incident. DoD has created, and is continually refining, an excellent response capability. For example, DoD established an Assistant to the Secretary of Defense for Civil Support to provide policy guidance and the Joint Task Force-Civil Support to assume operational responsibility for DoD's consequence management support to civil authorities for weapons of mass destruction incidents within the United States, its territories, and possessions. (See Chapter 7 for additional information.)

With respect to intelligence support, DoD recognizes the importance of timely dissemination of terrorist threat information from the Intelligence Community to the operators in the field. DoD continues to strive toward its goal of having fully coordinated joint operations and intelligence fusion cells at all levels. DoD intelligence organizations remain engaged in an aggressive, long-term collection and analytic effort designed to provide information that can better alert local commanders to potential terrorist attacks. Close working relationships with other members of the national Intelligence Community are being strengthened, and intelligence exchanges with U.S. allies have been increased.

CONCLUSION

The United States must size, shape, and manage its military forces to meet the fundamental challenge of the defense strategy—maintaining near-term capabilities to support the shape and respond elements of the strategy while simultaneously undergoing transformation to shape and respond in the future. The Department must continue its efforts to support regional security objectives efficiently and within resource constraints. At the same time, U.S. forces must be capable of operating across the spectrum of conflict—meeting the challenges posed by smaller-scale contingency operations as well as major theater wars—and in the face of asymmetric threats.

PART II

TODAY'S ARMED FORCES

CHAPTER 3

EMPLOYING U.S. FORCES TO IMPLEMENT THE DEFENSE STRATEGY

The defense strategy places a broad range of demands on U.S. military forces—shaping and responding to meet near-term demands, while at the same time preparing for an uncertain future. Meeting the military requirements of the strategy requires ready, robust, flexible military capabilities that draw on the combined strengths of each of the military Services, both active and reserve, and support agencies. The U.S. armed forces can only meet the demands of the strategy by seamlessly integrating Army, Navy, Air Force, and Marine Corps capabilities across the spectrum of operations from peacetime to wartime. Nothing short of fully joint armed forces—in both organization and doctrine—will ensure the effective and successful execution of the defense strategy.

THE UNIFIED COMBATANT COMMANDS

The National Security Act of 1947 established unified combatant commands, military commands that have broad continuing missions and are composed of forces from at least two military departments. The 1999 Unified Command Plan recognizes nine unified combatant commands, each led by a four-star general or admiral known as a CINC, or commander in chief. Four of these commands are geographic commands with a specific set of missions within a defined geographic area of responsibility (AOR). Four combatant commands have global responsibility for specialized capabilities. One combatant command has both functional and geographic responsibilities. The CINCs, drawing on guidance from the President and the Secretary of Defense, determine how those forces, provided by the Services, are used on a day-to-day basis.

Unified combatant commands exist for most every region of the world (excluding the Russian Federation, Canada, Mexico, the 48 contiguous states, and Antarctica). The primary purposes of the geographic commands are to use the forces they have been assigned and apportioned along with rotationally and temporarily deployed forces, to shape the environment, respond to the full spectrum of crises, and prepare for the future. The geographic CINCs are responsible for planning and conducting all military operations, including military engagement activities, and serving as the single point of contact for all military matters within their theaters of operation. In carrying out these duties, the CINCs may receive assistance from other geographic CINCs, as well as from the functional CINCs. Functional CINCs have worldwide responsibility for capabilities, such as transportation, strategic deterrence, space, joint forces, and special operations; they provide these high-demand resources to geographic CINCs and other governmental and inter-agency users as appropriate. Refer to Appendix A for a graphic depiction of the organization of the unified combatant commands within the Department.

UNITED STATES EUROPEAN COMMAND

The United States European Command (USEUCOM) is responsible for maintaining ready forces to conduct the full spectrum of military operations, enhancing transatlantic security through support to NATO, promoting regional stability, and advancing U.S. interests in Europe, Africa, and portions of the Middle East. To accomplish this mission, USEUCOM conducts military operations as well as a variety of engagement activities with NATO allies, Partnership for Peace (PfP) countries, and other friendly nations throughout its AOR. USEUCOM's operations apply military capabilities to deter and defeat aggression and to protect U.S. national security interests. Engagement activities include military-to-military contacts, exercises, combined education and training, security cooperation, humanitarian assistance, and arms control agreements. These activities shape the international environment by increasing interoperability, advancing democratic values, fostering a more stable security environment, and promoting readiness.

The command's area of responsibility includes more than 14 million square miles and 91 countries, extending from the North Cape of Norway to the Cape of Good Hope in South Africa. The Commander in Chief of USEUCOM (USCINCEUR) commands five U.S. components: U.S. Army Europe, U.S. Navy Europe, U.S. Air Forces in Europe, Special Operations Command Europe, and Marine Forces Europe. USCINCEUR is also NATO's Supreme Allied Commander Europe.

As one of the most operationally engaged commands, USEUCOM conducted several operations throughout 2000 in support of U.S. interests. During Operation Atlas Response, more than 700 personnel deployed to provide military assistance to governments and humanitarian relief agencies to help minimize human suffering resulting from severe flooding in the southern African region. Through Operation Focus Relief, USEUCOM deployed personnel to Nigeria to provide assessments and training to Nigerian units in support of the United Nations Mission to Sierra Leone (UNAMSIL). Additionally, USEUCOM continued to promote stability and peace in the Balkans by supporting ongoing peace operations. Approximately 6,300 USEUCOM personnel provided support to the NATO-led Kosovo Force, through Operation Joint Guardian, and nearly 4,000 personnel supported the NATO-led Stabilization Force in Bosnia through Operation Joint Forge. Finally, in Operation Northern Watch, USEUCOM forces continued their efforts to enforce the northern no-fly zone over Iraq in support of sanctions imposed by the U.N.

In 2000, USEUCOM conducted more than 3,000 engagement activities throughout its AOR. U.S. unilateral, NATO, and PfP exercises helped prepare U.S., allied, and partner forces for warfighting and for the myriad other missions common to this AOR. Key among these exercises was Peaceshield 2000, which marked the first strategic airborne deployment of U.S. forces to Ukraine. USEUCOM's special operations component (SOCCEUR) also increased the impact of forward deployed forces through the African Crisis Response Initiative, consisting of combined training and exercises to help promote interoperability with African nations. Through USEUCOM's unique Joint Contact Team Program, multi-Service military liaison teams from USEUCOM coordinated efforts to encourage democratization, military professionalism, and closer relationships with NATO in countries throughout Central Europe and the New Independent States. The Africa Center for Strategic Studies, modeled after USEUCOM's George C. Marshall Center for Strategic Studies, conducted its second leadership seminar in Botswana, providing a forum for African military and civilian leaders to discuss national security policy development, defense economics, and civil-military relations. These engagement activities provided immediate benefits by improving interoperability among U.S. forces and their allied and partner colleagues, and strengthening long-term political-military relationships between the United States and countries in the USEUCOM AOR.

UNITED STATES PACIFIC COMMAND

The area of responsibility for United States Pacific Command (USPACOM) extends from the west coast of the United States, including Alaska and Hawaii, to the east coast of Africa, and from the Arctic Ocean to Antarctica coastline. Geographically, USPACOM is the largest of the U.S. unified commands, with an AOR covering about 50 percent of the earth's surface or more than 100 million square miles, including 43 countries, 10 U.S. territories, and 20 territories or other countries that together make up nearly 60 percent of the world's population. The Commander in Chief of USPACOM (USCINCPAC) commands a total force of about 300,000 military—nearly 22 percent of all active duty U.S. military forces—drawn from all the Services, and organized into a headquarters with five component commands: U.S. Army Pacific, U.S. Pacific Fleet, U.S. Marine Forces Pacific, and U.S. Pacific Air Forces, and Special Operations Command Pacific.

The United States remains committed to maintaining peace and stability through the forward deployment of substantial ground, air, and naval forces stationed in both the Republic of Korea and Japan, as well as forces rotated through the region. The Asia-Pacific region has significant potential flash points for crisis and conflict, including several unresolved territorial and border disputes. In recognition of the modern threats present on the Korean Peninsula, USPACOM conducts the Coral Breeze series of exercises to promote NBC defense preparedness. In Japan, USPACOM conducts the Keen Edge and Keen Sword series of command post and field training exercises in support of our commitments under the Treaty of Mutual Cooperation and Security. In addition to these significant ongoing contributions to deterrence, USPACOM also provides forces to USCENTCOM in support of Operation Northern Watch, Operation Southern Watch, and the Multinational Interception Force (MIF) in the Arabian Gulf. USPACOM also provides support to United Nations (UN) sponsored efforts to stabilize and nurture democracy in East Timor. These efforts included Operation Stabilise (led by Australia) and the follow-on UN Transitional Administration in East Timor (UNTAET), which is still ongoing.

USPACOM forces are employed throughout the diverse Asia-Pacific region to shape the region's security environment. In 2000 for example, USPCOM forces conducted over 2,000 Theater Engagement Plan (TEP) events that encompassed seminars, exchanges, professional military education, small unit training, and exercises ranging from those between services to large-scale joint combined exercises. A significant portion of USPACOM's exercise activity is dedicated to maintaining regional stability through forward presence and military preparedness. Exercise Foal Eagle provides division-level U.S.-ROK field training on the Korean Peninsula. Exercise Cobra Gold, held in Thailand, strengthens U.S.-Thai defense planning and enhances interoperability through extensive field training. Exercise Tandem Thrust, held in Australia, is a bilateral U.S.-Australia exercise to enhance the planning and execution of joint/combined operations for a short-notice, power projection regional contingency.

In 2000, USPACOM began promoting enhanced regional cooperation to enable multilateral cooperation among the nations of the Asia-Pacific region. This effort builds upon the relationships and skills developed by existing bilateral engagement to enhance Asia-Pacific capabilities to respond to non-traditional security challenges, such as UN-sanctioned humanitarian assistance, disaster relief, search and rescue, and non-combatant evacuation operations. For example, in 2000, USPACOM, in conjunction with U.S. allies and friends in Australia, the Philippines, Singapore, and Thailand, began planning efforts to integrate existing traditional exercises, such as Balikatan, Cope Tiger, Cobra Gold, and Tandem Thrust into a regional exercise, called Team Challenge (TC) '01. TC '01 will train regional contingency combined/joint task

forces (CJTF) and improve interoperability with regional partners for international peace operations. Cooperation fostered under enhanced regional cooperation not only improves Asia-Pacific capabilities to deal with new security challenges, but also enhances regional stability by making inter-state conflict less likely to occur.

USPACOM conducts counterdrug operations through Joint Interagency Task Force-West, focusing on detecting, monitoring, and supporting interdiction of the drug flow in the eastern Pacific, as well as counterdrug operations in Southeast Asia. USPACOM also provides forces to Joint Task Force-Full Accounting, working with representatives from Vietnam, Laos, and Cambodia charged with supporting investigations and human remains recovery operations to provide the fullest possible accounting of American citizens still missing as a result of war in Southeast Asia. Finally, USPACOM provides educational and military exchange opportunities through courses at the Asia-Pacific Center for Security Studies and the Center for Excellence in Disaster Management and Humanitarian Assistance, both located in Hawaii.

UNITED STATES CENTRAL COMMAND

The United States Central Command (USCENTCOM) has an area of responsibility larger than the continental United States, and includes 25 countries of diverse political, economic, cultural, religious and geographic makeup. This area stretches approximately 3,600 miles north to south and 3,100 miles east to west, and is geographically divided into four sub-regions: South and Central Asia, Arabian Peninsula and Iraq, Northern Red Sea, and the Horn of Africa; it is bounded by Kazakhstan in the north, Kenya and the Seychelles in the south, Pakistan in the east, Egypt in the west, and includes the waters of the Arabian Gulf, Red Sea, Gulf of Oman, and the western portions of the Indian Ocean. The Commander in Chief of USCENTCOM commands five component commands: U.S. Army Forces Central Command (ARCENT); U.S. Central Command Air Forces (CENTAF); U.S. Naval Forces Central Command (NAVCENT); U.S. Marine Forces Central Command (MARCENT); and Special Operations Command Central (SOCCENT).

In order to support the national defense strategy, USCENTCOM integrates a wide array of activities focused on the development of professional regional militaries responsive to civil authority, the enhancement of regional security partners' ability to assist in their own defense, and the formation and maintenance of a coalition that is organized to provide collective security in order to ensure stability in the region. USCENTCOM shapes the regional security environment using a variety of initiatives and activities, including combined training, military-to-military contacts, exercises, and security cooperation with nations in the region. These efforts develop interoperability and reinforce military-to-military relationships between the United States and host nations. Included among the many shaping activities this year were USCENTCOM's Central Region Symposium (CRS), the Cooperative Defense Initiative (CDI), the Central Asian Battalion, Operation Desert Spring, and exercises Eagle Resolve, Natural Fire, Golden Spear, and Bright Star. USCENTCOM also coordinates educational opportunities by placing over 2,000 students from countries across the region in a variety of U.S. military courses, schools, and colleges, including the George C. Marshall Center for Strategic Studies, the Africa Center for Strategic Studies, and the Near East-South Asia Center for Strategic Studies.

In 2000, the USCENTCOM Central Region Symposium brought together 348 participants from 24 nations representing the full spectrum of interagency, academic, and business communities. The symposium reaffirmed the common interests between USCENTCOM and regional militaries and highlighted

opportunities to enhance U.S. influence in the region, particularly in the area of technology exchanges aimed at promoting increased interoperability.

The Cooperative Defense Initiative (CDI) is an international outgrowth of U.S. counterproliferation policy. CDI is a Department of Defense (DoD)/USCENTCOM program supported by the Department of State (DoS). This program is designed to reduce the vulnerability of the Gulf Cooperation Council (GCC) states, Egypt, and Jordan to weapons of mass destruction (WMD) coercion and to educate those states about the effects of WMD use. CDI engagement occurs in the following five functional areas: command, control, communications, computers, and intelligence (C4I) interoperability and shared early warning (SEW); theater air missile defense (TAMD) active defense; NBC passive defense; medical countermeasures; and consequence management. Engagement activities include: senior level military-to-military CDI discussions at annual Joint Military Consultations (JMC) or Military Consultative Council (MCC) meetings; intelligence exchanges about NBC threats; assessments of coalition partners' current capabilities, training, and doctrine; help with plan development and doctrine development; and bilateral and multilateral exercises to validate and to reinforce new and enhanced capabilities achieved through these engagement activities.

Operation Desert Spring is a year round operational deployment of U.S. Army and Special Operations forces that provides tangible evidence of the United States' commitment to the defense of Kuwait and enduring interests in this strategically important region. This operation focuses on unit training from company to brigade level to enhance U.S.-Kuwaiti Coalition military capability and interoperability.

In 2000, USCENTCOM continued to be actively engaged in enforcing United Nations Security Council Resolutions 661, 665, 687, and 949 through ongoing Maritime Intercept Operations (MIO) and Operation southern Watch. Since the beginning of Operation Desert Shield, MIO units have boarded over 12,762 ships, checking for contraband headed to or from Iraq. Approximately 747 ships have been diverted for violations. The participation of the United Kingdom, Canada, Australia, New Zealand, Kuwait, UAE, and Oman continues to demonstrate resolve for Iraqi compliance with applicable United Nations resolutions. Operation Southern Watch, executed by Joint Task Force-Southwest Asia (JTF-SWA), continues to maintain the southern no-fly zone and no-enhancement zone. The effect is to limit Saddam Hussein's ability to project military power into the southern third of Iraq, from where Iraq could threaten Kuwait and Saudi Arabia. Since its inception, the men and women supporting the JTF-SWA mission have flown over 232,000 sorties.

In addition, USCENTCOM directly supported U.S. efforts to negotiate an end to the hostilities between Ethiopia and Eritrea, including assisting the Presidential Envoy with military and regional issues during the ongoing peace talks in Algiers. Contingency planning was also conducted with MARCENT in support of potential non-combatant evacuation operations (NEO) and U.N. peacekeeping related to the Ethiopia/Eritrea conflict.

UNITED STATES SOUTHERN COMMAND

The area of responsibility for United States Southern Command (USSOUTHCOM) encompasses 32 countries and 14 dependencies, covering more than 15.6 million square miles. The region stretches 6,000 miles north to south from the southern Gulf coast of the United States to Tierra del Fuego at the tip of South America (exclusive of Mexico). The Command's headquarters is located in Miami, Florida. Its

component commands are the U.S. Army South, U.S. Air Forces South, U.S. Marine Forces South, U.S. Navy South, Joint Interagency Task Force-East (JIATF-E), the Joint Southern Surveillance Reconnaissance Operations Center, and Joint Task Force Bravo. USSOUTHCOM also has a subunified command, Special Operations Command South.

The focus of USSOUTHCOM is to strengthen democracy, promote human rights and the rule of law, encourage military subordination to civilian control, and counter transnational threats that affect U.S. security interests as well as the region's security, stability, and prosperity.

As part of the increased U.S. commitment to support Colombia's efforts to strengthen its security and its democratic institutions, USSOUTHCOM will have a key role in implementing the \$154 million military portion of the Colombia supplemental aid package passed in 2000. This package provides equipment, training, logistics, and infrastructure to support Colombia in detecting, monitoring, and interdicting illegal drugs.

The U.S. departure from Panama in 1999 also resulted in a significant restructuring of the Command's theater infrastructure. To support regional counterdrug efforts and emergence of Puerto Rico as the main operational hub for USSOUTHCOM operations, the Command established forward operating locations in Ecuador, El Salvador, and the islands of Aruba and Curacao. In addition, a Security Assistance Organization (SAO) was created in Guyana, making a total of 26 SAOs representing USSOUTHCOM on U.S. country teams throughout the region.

During 2000, USSOUTHCOM conducted more than 2,800 engagement events, involving more than 50,000 personnel. The wide array of activities included combined operations, exercises, and training and education; military-to-military contact initiatives; security cooperation; and disaster preparedness and humanitarian assistance efforts. In the wake of natural disasters, USSOUTHCOM has doubled the size of its New Horizons program of engineering and medical readiness training exercises. This program responds to the increased need for humanitarian assistance and disaster relief operations in Central America and the Caribbean, and involves more than 23,000 Guard and Reserve personnel.

Interagency operations and activities form an important part of USSOUTHCOM shaping and responding missions, including exercises with host nations, information sharing, and efforts to halt the flow of illegal drugs both at the source of production and in the transit zone. JIATF-E is responsible for conducting detection, monitoring, and handoff to appropriate law enforcement agencies of suspected drug trafficking events and coordinating support to counterdrug efforts in the region. Examples of some of the successful counterdrug activities include Operations Central Skies and Capet Focus in which coordinated efforts by DoD assets, U.S. Coast Guard, U.S. Customs, and Drug Enforcement Administration assets, plus host nation forces resulted in significant disruption of illegal drug movements in the eastern Pacific, Caribbean, and Central America transit zone regions.

Finally, USSOUTHCOM implementation of its theater strategy of cooperative regional engagement directly contributed to the peaceful end of a century-old conflict between Peru and Ecuador, and to the military's subordination to civilian authority in many countries throughout the AOR.

UNITED STATES JOINT FORCES COMMAND

The United States Joint Forces Command (USJFCOM), redesignated on October 1, 1999 from United States Atlantic Command, is headquartered at Norfolk, Virginia. USJFCOM is unique among the unified commands because it has both functional and geographic responsibilities. In addition to geographic responsibility for the North Atlantic Ocean theater (except for waters along the coasts of Europe and North Africa), the Azores, and portions of the Arctic Ocean, USJFCOM's main focus is its functional responsibilities of integrating, training, and providing joint, combat-ready forces for other CINCs. The recent redesignation emphasizes the role of the Commander in Chief of USJFCOM (USCINCFJCOM) as the chief advocate for jointness and places significant importance on enhancing joint warfighting and interoperability throughout DoD. USJFCOM seeks to maximizing the Nation's future and present military capabilities through joint concept development and experimentation, recommending joint requirements, advancing interoperability, conducting joint training, and providing ready CONUS-based forces and capabilities to support other CINCs, the Atlantic Theater, and domestic requirements. U.S. Joint Forces Command helps lead the transformation of the U.S. armed forces to achieve full spectrum dominance as described in *Joint Vision 2020*.

Key responsibilities include:

- Serving as the lead joint force integrator, responsible for combining Service and Defense agency capabilities to enhance interoperability and joint and combined capabilities by recommending changes in doctrine, organizations, training and education, materiel, leader development, personnel, and facilities.
- Serving as the DoD Executive Agent and functionally responsible to the Chairman of the Joint Chiefs of Staff (CJCS) for joint warfighting experimentation.
- Serving as the DoD Executive Agent for Personnel Recovery responsible for coordinating and advancing personnel recovery, capabilities throughout DoD.
- Serving as the lead agent for joint force training, responsible to the Chairman for managing the CINCs' portion of the CJCS exercise program, conducting and assessing joint and multinational training and exercises for assigned forces, and assisting the Chairman, other CINCs, and Service Chiefs in their preparations for joint and combined operations.
- Serving as the joint force provider of assigned CONUS-based forces, responsible for deploying trained and ready joint forces and providing them in response to requirements of other combatant commands when directed by the National Command Authorities.
- Providing, within the continental United States, military assistance to civil authorities (including consequence management operations in response to incidents involving chemical, biological, radiological, or nuclear agents or high-yield explosives), military support to U.S. civil authorities, and military assistance for civil disturbances, subject to Secretary of Defense approval.

- Planning for the land defense of the continental United States, domestic support operations to assist government agencies, and the combined Canada-United States land and maritime defense of the Canada-U.S. region.

UNITED STATES SPECIAL OPERATIONS COMMAND

The Commander in Chief of the United States Special Operations Command (USSOCOM) has over 46,000 active and reserve special operations forces (SOF) personnel organized into three component commands and one subordinate command: Air Force Special Operations Command (AFSOC), U.S. Army Special Operations Command (USASOC), Naval Special Warfare Command (NAVSPECWARCOM), and Joint Special Operations Command (JSOC). To fulfill its global mission, USSOCOM provides full spectrum SOF that are ready and capable of successfully conducting global special operations throughout the tactical and strategic operational continuum in support of the National Command Authorities (NCA), geographic CINCs, U.S. Ambassadors, and other government agencies. In support of the national military strategy, SOF currently organize and train in nine principal mission areas: counterproliferation, combating terrorism, foreign internal defense, special reconnaissance, direct action, psychological operations, civil affairs, unconventional warfare, and information operations.

SOF conducts more missions, in more places, and under a broader range of conditions than ever before. In FY 2000, SOF units deployed to 150 countries and foreign territories, performed 8 crisis response operations, participated in 132 joint combined exchange training events in 69 countries, performed 131 counterdrug missions in 27 countries, and supported demining activities in 20 countries. In an average week, nearly 5,300 SOF personnel were deployed in 64 countries or foreign territories.

The Nunn-Cohen Amendment created USSOCOM in 1987 and gave USCINCSOC the authority to direct and control the majority of the fiscal resources necessary to pay, train, equip, and deploy SOF through the establishment of a separate major force program. USCINCSOC can also exercise authority to function as a head of agency to develop and acquire SOF-peculiar equipment, materiel, supplies, and services.

USSOCOM's mission effectiveness requires the support of the Services to provide quality personnel, common equipment, base operations support, logistical sustainment, and core skills training. This support allows USCINCSOC to focus on providing a trained and ready SOF and to exercise command of selected special operations missions as directed by the NCA.

UNITED STATES SPACE COMMAND

The United States Space Command (USSPACECOM) is the single point of contact for military space operational matters, provides military representation to national and international agencies relating to space, and supports the efforts of other CINCs to integrate space-based assets into their plans, exercises, and operations. The Commander in Chief of USSPACECOM also serves as Commander in Chief of the North American Air Defense Command (CINCNORAD).

America's military satellite systems—used for communications, positioning and navigation, environmental monitoring, weather, reconnaissance and surveillance, imagery and mapping, monitoring and enforcing international treaties, and missile attack warning information—are under the control of United States Space Command (USSPACECOM). These systems provide essential information to

geographic CINCs as they employ U.S. forces worldwide by ensuring the United States has the access and ability to operate in space while denying enemies the capability to do the same.

In 2000, USSPACECOM operated satellites that provided critical information and served as force multipliers to U.S. forces in Bosnia, the Persian Gulf, and Kosovo. In addition, space-based assets were vital to continued monitoring of international treaties.

On October 1, 1999, USSPACECOM assumed Computer Network Defense (CND) responsibilities for the Department, protecting the Defense Information Infrastructure and its system of over two million computers and 10,000 local area networks. Since beginning CND operations, USSPACECOM has detected and defeated over 250,000 attempted intrusions against DoD systems. On October 1, 2000, USSPACECOM assumed responsibility for DoD's Computer Network Attack mission, developing offensive capabilities to deny or disrupt enemy computer systems and networks. USSPACECOM is also responsible for planning and developing requirements for strategic ballistic missile defense and providing space-based support for tactical ballistic missile defense.

UNITED STATES STRATEGIC COMMAND

The United States Strategic Command (USSTRATCOM) has the responsibility for strategic deterrence, and should deterrence fail, the employment of nuclear forces to achieve national objectives. To maintain a credible and efficient deterrent, the Command conducts centralized planning for the employment of strategic forces, ensures that these forces operate under strict command and control, and would, upon direction of the National Command Authorities, employ these forces to achieve national objectives. Accomplishing USSTRATCOM's mission is based on the nuclear Triad—land-based inter-continental ballistic missiles (ICBMs), submarine-launched ballistic missiles (SLBMs), and long-range bombers (B-2s and B-52s). Strict command and control of these forces is accomplished by the U.S. Strategic Command underground command center; airborne command posts, a mobile ground command center; and refueling and reconnaissance aircraft. The Command also provides timely and tailored intelligence to meet the needs of combatant commanders and the nation during peace, crisis, or war. USSTRATCOM also provides specialized planning support to theater CINCs to counter the proliferation of weapons of mass destruction. Additionally, the Command works in concert with other government agencies to ensure responsible stewardship of resources within the National Defense Stockpile program.

UNITED STATES TRANSPORTATION COMMAND

The United States Transportation Command (USTRANSCOM) is America's single defense transportation system manager responsible for coordinating strategic transportation assets and personnel necessary to project and sustain U.S. forces. USTRANSCOM supports worldwide military operations across the spectrum of conflict from exercises to humanitarian assistance to peacekeeping to deterrence and combat operations.

USTRANSCOM supports the national defense strategy through three component commands: Air Mobility Command, Military Sealift Command, and Military Traffic Management Command. In 2000, USTRANSCOM provided airlift, aerial refueling, sealift, and land transportation to deploy joint forces to crises, exercises, and peacetime engagement activities critical to the U.S. military's worldwide shaping and responding missions. USTRANSCOM delivered people, food, medical supplies, and heavy equipment to

humanitarian relief operations in Central America, Africa, Turkey, and elsewhere. All components deployed active and reserve forces in support of NATO peacekeeping operations in Bosnia (SFOR) and Kosovo (KFOR) and to support enforcement of coalition no-fly zones in Northern and Southern Iraq. In today's volatile world USTRANSCOM and its component commands—together with civilian partners in the nation's Defense Transportation System—provide the unified team ensuring America's hands are able to reach out to those in need and, if need be, to take America's forces to the fight, sustain them in battle, and bring them home victorious.

OTHER COMMANDS

In addition to the nine unified combatant commands, there are also subunified commands and combined commands that play an important role in the U.S. defense strategy. Two of these commands, U.S. Forces Korea and North American Aerospace Defense Command, are particularly unique and warrant further discussion.

U.S. FORCES KOREA

U.S. Forces Korea (USFK) is a subordinate unified command of USPACOM and serves as the joint headquarters through which American combat forces would be made available to the binational Combined Forces Command (CFC), which exercises control over more than 600,000 active duty military personnel from the United States and South Korea. In the event of an attack from North Korea, the CFC would provide a coordinated defense of South Korea through its fighting components—the Combined Ground, Air, Naval, Marine Forces, and Special Operations Component Commands. Commander USFK, a four-star U.S. Army general, is also the Commander in Chief, Combined Forces Command, with a four-star Republic of Korea (ROK) Army general serving as the deputy. Additionally, Commander USFK serves as the Commander in Chief United Nations Command and visibly represents the will of the UN Security Council to secure peace on the Korean Peninsula.

Joint and combined training exercises are a major tool to shape the international environment on the Korean Peninsula. These exercises demonstrate U.S. and ROK warfighting capabilities, enhance interoperability between these forces, and deter aggression from North Korea. In 2000, USFK's participation in Exercises RSOI (Reception, Staging, Onward Movement, and Integration) and Ulchi Focus Lens and Foal Eagle provide critical joint/combined training and demonstrate the United States' ability and commitment to move substantial forces onto the Korean Peninsula in the event a renewed regional conflict erupted into war. These sophisticated exercises plus robust modernization efforts by USFK forces provide tangible evidence of U.S. resolve for peace and stability on the Korean Peninsula.

NORTH AMERICAN AEROSPACE DEFENSE COMMAND

The North American Aerospace Defense Command (NORAD) is a binational combined command that includes Canadian and U.S. forces. This command is responsible for aerospace warning and control for North America. The Commander in Chief of NORAD (CINCNORAD) also currently serves as Commander in Chief, United States Space Command. In accordance with the binational NORAD agreement, CINCNORAD is responsible through the Canadian Chief of the Defense Staff and the U.S. Chairman of the Joint Chiefs of Staff to the Canadian and U.S. National Command Authorities. Finally, U.S. Element NORAD is responsible for employing U.S. aerospace forces unilaterally to defend the

continental United States, Alaska, and other areas as directed. NORAD's command and control center is located in Cheyenne Mountain, Colorado, an underground base that is the central collection facility for a worldwide system of sensors designed to provide the CINC, the President, and the Prime Minister of Canada with an accurate picture of any aerospace threat.

By providing early warning of a potential aerospace attack, NORAD helps deter aggression against North America on a daily basis, a critical shaping mission. By providing early warning of an attack, NORAD also enables the United States Strategic Command to effectively respond if necessary.

CONCLUSION

The commanders in chief ensure that U.S. military forces actively shape the international environment and respond as needed across the full spectrum of crises. These commands conduct operations around the world, from peace enforcement operations in Bosnia, to humanitarian relief operations throughout Africa, to counterdrug operations in Latin America and the Caribbean. Finally, the CINCs—both geographical and functional—remain fully prepared to conduct, support, and prevail in major theater warfare in the event shaping and deterrence do not succeed. Working as a team with the geographic commands, the functional commands provide essential support for virtually all of these operations.

CHAPTER 4

READINESS

In today's demanding and volatile international security environment, the United States military must remain the best trained, equipped, and led force in the world. Recruiting, retaining, equipping, and training the military to fight and win the nation's wars is a demanding task, and is the number one priority of the Department of Defense. As the highest priority program, the Department's FY 2002 plan fully supports the critical readiness requirements. The FY 2002 plan continues the increases in pay and benefits for personnel, buys more spare parts for the weapons systems, increases expenditures on critical training enablers, and supports the necessary investment to acquire new weapon systems.

AMERICA'S FORCE IS READY

WORLDWIDE RESPONSE AND ENGAGEMENT

The U.S. armed forces remain the most capable in the world and have demonstrated their readiness in meeting America's security obligations around the globe. In the past year, U.S. armed forces have successfully responded to numerous contingency operations worldwide. From patrolling the no-fly zones of Iraq in Operations Northern and Southern Watch to the continuing peacekeeping and peace enforcement operations in the Balkans, America's military continues to perform magnificently.

HUMANITARIAN OPERATIONS

The U.S. armed forces successfully responded to numerous humanitarian crises around the globe and at home. Whether the mission was bringing relief supplies to the flooded lands of Africa, or fighting the wild fires rampant in the Western region of the United States, America's military responded with resounding success. Simultaneously, the U.S. armed forces have effectively maintained a forward presence around the world, in such places as Southwest Asia, Europe and the Pacific Rim.

MEETING THE NATIONAL MILITARY STRATEGY

In answering the call to respond to such wide a range of missions, the U.S. armed forces have consistently demonstrated their versatility and unmatched capability. Today's military is ready and capable of executing the National Military Strategy of fighting and winning two overlapping major theater wars. However, the risk factors for fighting and winning the first major theater war are assessed as moderate. The risk factors for the second major theater war are assessed as higher due to lower readiness levels of later-deploying forces, and capability shortfalls in lift and other critical support forces.

THE READINESS CHALLENGE

Readiness is the foundation of U.S. military credibility as an instrument of national power. The need to maintain well-trained, combat-ready forces remains clear and unchanged. While the armed forces can meet the challenge, signs of stress are apparent in some readiness indicators and field reports. Challenges in recruiting and retaining quality people, maintaining aging equipment to a high readiness standard, and managing a demanding operating tempo have strained the force.

Working together, the Department of Defense and Congress have taken steps to alleviate these strains and keep the U.S. military at peak performance. The positive effects of the focused budget increases for readiness over the last three years are beginning to be seen in the field. As part of a continuing strong five-year plan, the FY 2002 plan calls for aggressive programs to further enhance the Department's current readiness posture, and begin to address the longer term readiness requirements of modernized forces.

Although the Department's plans will significantly enhance readiness, these enhancements will take time, effort, and continued leadership. The Department recognizes this challenge, and has a number of initiatives underway to ensure the U.S. armed forces are always ready.

CHALLENGE: PERSONNEL READINESS

RECRUITING

The U.S. armed forces recognize that attracting and retaining quality members is one of their most challenging tasks. Increasing threats to U.S. security and emerging technology make quality service members indispensable. The Department continues to address myriad challenges by surmounting barriers to meeting recruiting goals. As a result, the nation's brightest youth remain attracted to the opportunities offered by service in the military, but keeping those high quality youth on board presents an equally tough challenge. Unlike the recruiting shortfalls experienced in 1999, all Services met their active duty recruiting goals for FY 2000. Further, all active and reserve components will meet or exceed their recruit quality standards. Additionally, all active components will meet their overall officer commissioning goals. In order to keep pace with the recruiting challenge, the Department has significantly increased the recruiting and advertising budget.

RETENTION

The Army, Navy, and Marine Corps show signs of success in meeting or exceeding FY 2000 retention goals. Although the Air Force missed its annual goal, it is postured better for FY 2001 and has implemented initiatives to address retention shortfalls. Moving toward recruiting and retention success has not occurred without costs; increased effort and enhanced enlistment incentives for all of the services have been greater than ever before. To maintain a skilled, capable, adequately manned force, the Services must also retain their key mid-career and senior leaders. Through careful management and incentive program expansions, retention problems have not significantly affected readiness, but shortages in certain skills and specialties, such as pilots, machinists, and information technology specialists, merit continued vigilance.

COMPENSATION

Continued strong congressional support enables the Department to address concerns and make military compensation more competitive with the private sector. The Fiscal Year 2001 Defense Authorization Act provided a 3.7 percent raise in basic pay and DoD must plan for similar raises in pay for the future in order to compete effectively with private sector wages. Private sector wages are expected to rise by 3.2 percent, as measured by the Employment Cost Index (ECI).

Along with adequate compensation, the Department is fully committed to supporting initiatives that improve military members' quality of life, which may influence them to stay in the military longer than a minimum enlistment. A major housing allowance initiative designed to eliminate service members' out-of-pocket costs for living off-post by increasing the basic housing allowance began this year. The Department is committed to cutting these out-of-pocket costs for the average service member to 15 percent in FY 2001, to 11.3 percent in FY 2002, and reducing them to zero by FY 2005. Members will also be able to participate in the recently authorized thrift savings program and mass transit subsidy benefit.

CHALLENGE: TEMPO MANAGEMENT

While deployments are a necessary part of military life, the number and frequency of deployments have increased at a time when the size and permanent forward presence of the armed forces has declined. This increased tempo has affected all of the Services. Responding to more frequent contingencies continues to challenge the force, particularly for those specialized and limited assets consistently in demand, such as the airborne reconnaissance platforms. The Department recognizes that the more frequent deployments are causing military members to spend even more time away from home, placing greater stress on both the individual and family. A high rate of deployments can also place a greater strain on those personnel who remain at the home station because they must also cover ongoing duties normally performed by the deployed personnel. Unit commanders are challenged with managing and balancing military training requirements with the stability necessary for the long-term health of military families. Large numbers of commitments not only stress unit training and morale, but also recruiting and retention.

INITIATIVES

The Department has aggressively worked the tempo management challenge. In concert with Congress, DoD is implementing common definitions, standards, and data collection methods to provide detailed reporting and management of tempo related issues. Starting in FY 2001, each Service will track and monitor days that a service member is deployed or performing duties that prevent the member from returning to his or her normal billeting area during off-duty periods. The Department is strongly committed to using this new personnel tempo management system to ensure service members are not driven from the military by frequent deployments. The Department is required to report personnel tempo in accordance with Section 923 of the National Defense Authorization Act (NDAA) for Fiscal Year 2000. (See Appendix N.)

CHALLENGE: MATERIEL READINESS

AGING EQUIPMENT

The Department is dealing with the particularly tough challenge of maintaining its weapon systems in a high state of readiness. Aging systems, spare parts shortages, and high operating tempo are placing increased pressure on the materiel readiness of the force. Keeping the aircraft mission capable rates within readiness goals presents a notable challenge. Ground equipment condition is better, but still requires close attention to keep systems at goal. The long-term sustainability of the Department's equipment is a continuing challenge, requiring remedies to effectively address equipment wear, excessive age, and the rising cost of spare parts. These factors increase maintenance costs, the total number of spare parts required, and the number of manhours needed to perform the maintenance.

INITIATIVES

The Department has taken aggressive action to address these materiel readiness concerns. Over the last three years, almost \$2 billion were added to buy more spare parts and depot level repairs. Likewise, over \$300 million in Kosovo emergency supplemental funding was targeted to meet the most urgent requirements. These actions are beginning to have an effect on the material readiness of the units. For example, the Air Force has experienced a 58 percent reduction in parts backorders, and appears to have arrested the decline in mission capable rates.

To help address materiel readiness concerns, the Department spearheaded an ongoing analysis of the current spare parts, logistics, and sustainment standards of the armed forces. The analysis found that while each of the Services has maintained logistics sustainment standards for many years, these standards differ among the Services due to differences in mission, force structure, and employment concepts. While the Services do report some shortfalls in meeting their sustainment standards, these are not unexpected. The fielding of new weapons systems, real-world contingency operations such as those in Kosovo, and the introduction of new operational concepts, all affect the computation of sustainment requirements. Given these factors and the lead time needed for new procurement, this necessarily translates to some shortfall between current requirements and on-hand assets.

The Department has also increased the investment accounts to \$60 billion per year to replace or modernize these aging weapon systems. Modernizing the force is imperative to assuring long term readiness, reducing the maintenance burden on the troops, and providing the most modern and battle ready armed forces in the world.

CHALLENGE: TRAINING THE FORCE

The Department's training objective continues to be one that ensures U.S. forces have the highest quality education and training, tailored to current and emerging requirements, and delivered whenever and wherever required. The emerging technology-based learning environment provides a broad range of options to meet individual and situational needs and the Department is building the foundation to take advantage of this environment. Options include institutional training establishments, distributed training and learning technologies, distributed simulation, embedded training capabilities, intelligent systems, and high-bandwidth communications. Innovative uses of information, computing, and network technologies

will provide the opportunities to make the learning process better, faster, and more efficient, while reducing personnel tempo and improving readiness.

ADVANCED DISTRIBUTED LEARNING

The Department's Advanced Distributed Learning (ADL) initiative encompasses both education and training and is the Department's principal mechanism for creating the learning environment of the future. The Department collaborates with outside agencies on the ADL initiative, since the guidelines and standards, implementing technologies, and learning objectives that serve DoD's needs are common with those of other government agencies and the private sector.

The Department has developed a strategic plan and an implementation plan for ADL that describes the programs, resources, and milestones associated with creating the ADL environment. In addition, DoD has established an ADL lab as a focal point for collaborative research, development, and assessment of new tools, methodologies and distributed learning content. The Joint Staff also has initiated key ADL programs, such as the National Defense University's Joint Virtual Learning Environment, the Commander in Chief Joint Forces Command's ADL network, and the Joint Staff's Doctrine Networked Education and Training.

Service training commands have created major programs and are increasing their investments in advanced learning technologies to better facilitate the ways in which they provide individual and collective education and training. The National Guard has a major ADL initiative to extend education and training resources across the local, state, and federal communities. In addition, the standard output of the institutional training base is now measured as part of the DoD Readiness Reporting System, to ensure that active and reserve component units are supplied with qualified individuals.

UNIT TRAINING

Unit training is key to building force readiness. During unit training, individuals and teams complete essential training tasks required for combat proficiency. The military departments continue to pursue unit training programs that place greater emphasis on achieving interoperability between Services and that extend unit-training opportunities to the Total Force. The Department has also made improvements in how unit training will be captured in DoD readiness reporting.

JOINT/INTEROPERABILITY TRAINING

Joint training is the process by which forces of two or more Services, interacting with a combatant commander, and using joint doctrine or joint tactics, techniques, and procedures prepare themselves to act as joint forces for responding to strategic and operational requirements. The Joint Training System (JTS) shapes the way the armed forces train. Through the JTS, the Chairman of the Joint Chiefs of Staff ensures that joint training requirements are met, with special emphasis on training the capabilities required to achieve the Chairman's *Joint Vision 2020*.

The Department is actively pursuing advances in modeling and simulation technology to augment joint training, improving warfighter readiness and combat effectiveness. The ability to link live, virtual, and constructive simulations will allow DoD to train in a realistic, fully integrated environment, capable of supporting the entire spectrum of training from individual to campaign-level mission rehearsal. From the

Army's individual marksmanship training with the Engagement Skills Trainers, to team training with the Navy's Battle Force Tactical Trainer and the Air Force's Distributed Mission Training, to staff level training with the Joint Simulation System (JSIMS), the Department is working aggressively toward developing interoperable systems. JSIMS is designed to provide a global, computer-assisted training environment, where forces in every theater around the world can simultaneously participate in multiple-level simulations of joint training exercises. This will allow both stateside and overseas forces to operate, interact, and train together in real time.

MODERNIZED TEST AND TRAINING RANGES

Modern weapons and sensors allow longer engagements, thereby increasing the demand for testing and training space. At the same time, there is greater commercial and cultural pressure to limit space that is currently available. This includes increased urbanization around installations, environmental legislation, and the reallocation of certain electronic spectrum for commercial use. Partial relief can come from the increased flexibility of modern instrumentation, designed to electronically link training areas and facilitate worldwide applications of instrumented live training. This instrumentation will allow DoD to substitute modeling and simulation and/or threat emulators for costly live opposition forces and will increase the depth, breadth, affordability, and flexibility of the live-training environment. Instrumentation also maximizes the efficiency and effectiveness of live-training (operating) budgets. Increasing emphasis on common and interconnected instrumentation systems will facilitate interoperability training at the unit level.

In spite of these improvements in instrumentation, DoD continues to require large ranges for testing and training. Only through live, realistic testing and training can leaders be sure that their forces are prepared to meet the challenges of military action. Many examples, most notably the current situation concerning Vieques, Puerto Rico, serve to alert the Department to the increasing constraints on the Services' ability to conduct live training. In order to assure required access to these ranges, the Defense Test and Training Steering Group has analyzed range sustainability issues and is developing a comprehensive plan to address them. The plan will address issues such as airspace restrictions, designation of critical habitats, unexploded ordnance and munitions, noise, safety, public access, hazardous materials, air quality, and ground water quality. Furthermore, it will lay the foundation to ensure both near- and long-term testing and training range availability, a necessary element for achieving the highest possible level of readiness.

CHALLENGE: MEDICAL READINESS

Medical readiness, the Military Health System's primary focus, encompasses protecting and sustaining the health of the force, medical operations in small-scale contingency operations, and medical support of the Department's role in domestic preparedness against weapons of mass destruction. Significant progress has been made in designing a joint health strategy for the 21st century and in implementing efforts to protect the health of the force. DoD developed the Joint Health Service Support Vision 2010—Full Spectrum Health, which supports *Joint Vision 2020* and has become the conceptual framework for developing and providing health services to support the warfighting mission into the 21st century. Medical research and development contributes to enhanced force and medical readiness on future battlefields through focused investment in the discovery and development of materiel and information products that prevent illness and injury, treat casualties, and sustain optimum operational effectiveness.

The strategy of force health protection (FHP) continues to guide the Department's efforts to sustain and preserve the health of the force, during deployments and at home station. With the ongoing operations in the Balkans and Southwest Asia, the Department continues to focus on improved medical record keeping, disease and non-battle injury surveillance, pre- and post-deployment health assessments, environmental surveillance, combat/operational stress prevention and treatment, and suicide prevention and treatment. Service members receive briefings and training on how to remain healthy and safe while performing their missions under potentially hazardous environmental, chemical, low level radiological, and biological warfare conditions.

The Millennium Cohort Study is derived from lessons learned following the Gulf War. This is a probability-based study that will prospectively follow a cross-sectional sample of 100,000 U.S. military personnel. It is an integral part of the Department's strategy to preclude Gulf War Illnesses-type experiences in future deployments and to maintain troop morale, confidence, and effectiveness. In addition, DoD is working with the Department of Veterans Affairs and national and international experts to develop an evidence-based post-deployment health clinical evaluation program focused in the primary care setting. Evidence-based clinical practice guidelines are being developed to assist health care providers in screening, evaluating, and treating service members with health concerns post-deployment. Integral to the success of these major health initiatives has been the establishment in 1999 of DoD Research and Clinical Centers for Deployment Health. These centers use their expertise and capabilities in clinical care, surveillance, and research to identify trends in the health of deployed service members and to target areas for improvement.

The FHP strategy leverages technology to better monitor and protect the health of deployed forces. Information technology forms the linchpin of the Department's efforts to capture and analyze health and readiness information regarding service members, especially during deployments. In this regard, work continues on both the Personal Information Carrier and the Theater Medical Information Program.

The Anthrax Vaccine Immunization Program (AVIP) remains a major focus of the Department. On July 17, 2000, the Department ordered a temporary slowdown in the AVIP to conserve the vaccine supply until the Food & Drug Administration approved the manufacturer's renovated vaccine-production facility. Due to continued delays in the availability of the FDA-released vaccine, the Department directed a further slowing of the AVIP on November 27, 2000. In this latest directive, the area of program execution is redefined from Southwest Asia and Korea to only Southwest Asia. All remaining DoD personnel defer future doses until sufficient anthrax vaccine supply is available. All continuing vaccinations will be provided consistent with the FDA-approved six-dose vaccination schedule. Multiple initiatives continue to support the AVIP, including a worldwide immunization tracking system, civilian review of reports of adverse events, and a customized health communication program.

Another important Department initiative was the establishment of a new position to advise the Secretary of Defense on the force health aspects of deployments, as a result of lessons learned from the Gulf War. The Special Assistant for Gulf War Illnesses, Medical Readiness and Military Deployments, will be accountable to the Secretary, veterans, and the American public on these issues. The Office of the Special Assistant will deal with the non-health-related matters for ongoing and future deployments, and be a strong voice on behalf of service members. It will also continue to work with veterans' and military service

organizations. The Office of the Special Assistant will also review force health-related deployment plans to identify opportunities to enhance force health protection of service members and civilian personnel.

Smaller-scale contingency operations and the Department's role in support of the consequence management aspect of domestic preparedness carry responsibilities for military medicine. Operations dedicated to humanitarian assistance, disaster relief, and peacekeeping frequently include or are solely supported by military medical personnel. These operations help to build international coalitions and promote U.S. interests, as well as to provide training experiences for medical personnel. The White House initiative to address the global AIDS pandemic—the Leadership and Investment in Fighting an Epidemic program—is a current example. When funded by Congress, DoD will have \$10 million, of the \$100 million identified, to share existing HIV/AIDS universal and targeted prevention programs with selected African militaries, share HIV/AIDS prevention programs for providers, and identify methods to protect the blood supply. With domestic preparedness, the Department works in close collaboration with other federal agencies to plan for and test a variety of possible medical responses in the event of a national disaster or an attack with weapons of mass destruction.

Medical readiness is an important facet of personnel readiness. Accessible and quality medical care for active duty members, retirees, and eligible dependents directly affects the Department's ability to attract and retain the quality men and women required to sustain the all-volunteer force.

CONCLUSION

The Department's soldiers, sailors, airmen, and Marines continue to do a remarkable job managing the changes of the past decade. For the foreseeable future, the Department will be challenged to maintain high readiness levels in its forces. The Department's continuing initiatives, with strong congressional support, will build on the strong readiness foundation built over the past three budgets, and will lead to further readiness improvements throughout DoD. These efforts will set the stage for future readiness enhancements and ensure the United States will continue to have the best trained, equipped, and led forces in the world.

CHAPTER 5

CONVENTIONAL FORCES

Conventional forces provide the bulk of the nation's military capability. Consisting of four elements—land, naval, aviation, and mobility—these forces conduct the full range of military missions, with the exception of special operations, nuclear deterrence, and space operations. As such, they play a crucial role in executing the defense strategy, which focuses on shaping the international environment and responding to a broad variety of crises. Toward this end, conventional forces perform forward presence missions, engage in a range of smaller-scale contingencies, and conduct combat operations up to and including major theater wars.

The defense program provides resources to sustain and modernize the nation's forces in both the near and far terms. This chapter describes the capabilities required for executing conventional force missions and the investments vital to maintaining and enhancing those capabilities.

The United States routinely deploys forces abroad to support its international interests. Historically, forward deployments of troops have been concentrated in three regions:

- Asia-Pacific—One Army mechanized division, one Marine expeditionary force, 2.2 Air Force fighter wing-equivalents, one Navy carrier battle group, and one amphibious ready group with an embarked Marine expeditionary unit. Additionally, forward-based forces in the Pacific region include one light infantry division in Hawaii and 1.25 fighter wing-equivalents in Alaska.
- Europe—The major elements of one Army armored and one Army mechanized infantry division, 2.2 Air Force fighter wing-equivalents, one carrier battle group, and one amphibious ready group with an embarked Marine expeditionary unit.
- Southwest Asia—One Army heavy battalion task force and one attack helicopter battalion, Air Force fighter/attack and support forces, one carrier battle group, and one amphibious ready group with an embarked Marine expeditionary unit.

As needs arise elsewhere, all four Services periodically deploy forces to forward locations. These deployments involve both active and reserve component units. U.S. equipment and material prepositioned ashore and afloat in selected regions contribute substantially to overseas deployments.

THREATS

As potential regional aggressors expand their technological capabilities and modify their doctrine, they will pose increasingly lethal threats to military operations. The proliferation of modern defense technologies means that U.S. forces must maintain a substantial advantage over potential adversaries to

ensure quick and decisive victory with minimum casualties. U.S. forces simultaneously must be prepared to operate in the face of asymmetric threats, such as nuclear, biological, or chemical (NBC) weapons; ballistic or cruise missiles; terrorism; and information warfare.

AVIATION THREATS

Although threats to U.S. air forces are below levels that would put air superiority at risk in the near term, the proliferation of advanced systems in the future could make the capability of U.S. forces to establish air superiority in future conflicts more problematic. U.S. air operations during Operation Allied Force demonstrated the effectiveness of legacy systems against older air defense technologies. However, intelligence estimates project that adversaries could field significant numbers of improved surface-to-air missiles or new generations of fighter aircraft, potentially limiting the employment of U.S. air power against vital target sets at the outset of a conflict.

While the chief current regional adversaries—Iraq and North Korea—have done little over the past decade to augment their capabilities against U.S. air forces, they—or other possible future adversaries—may be able to exploit a wide range of advanced air-to-air and surface-to-air technologies and systems available on the international market. Aviation systems and weaponry currently being offered for sale include fighter aircraft, air-to-air missiles, and air defense systems. Properly employed, these systems could pose a difficult challenge to U.S. forces in combat. The further proliferation of advanced weapon systems could drive up U.S. losses in a future conflict, making continued improvements in the nation's military capability imperative.

Given the current U.S. preeminence in air combat capability, potential adversaries are likely to emphasize ground-based air defenses and deception measures, such as the camouflage of ground targets. Adversaries probably will also further harden ground targets and exploit ground mobility, where possible. Accordingly, the defeat of enemy ground-based air defenses has a high priority in aviation force planning. Improved capabilities for destroying camouflaged and hardened targets also are being sought through a number of research and development efforts.

Several countries of concern to the international community are making serious efforts to move important military and industrial facilities underground. The secrecy surrounding these projects compounds the difficulty of planning the neutralization of such targets in wartime. Enemy use of dummy targets and decoys also can work effectively to dilute or confuse air attacks if not countered by the adoption of sophisticated information-gathering and targeting systems. Finally, the use of unconventional approaches, such as the dispersal of troops or weapons in densely populated urban areas, can limit the application of strike systems like missiles and air-delivered bombs. Tactics of these kinds were widely employed against NATO forces during Operation Allied Force. While quite effective in limiting enemy losses, these measures also constrained the ability of enemy forces to deploy, mass, or maneuver. Once enemy ground units massed in the open, where they could not conceal their location, they became vulnerable to air attacks.

The lessons of Operation Allied Force concerning potential threat capabilities are particularly important in comparison with the experience of the Gulf War and the continuing air patrols being flown over Iraq in support of Operations Northern Watch and Southern Watch. Serbian exploitation of ground terrain and foliage cover, combined with the use of decoy targets, points to the need for continued improvements in

several aspects of future air attack operations, with emphasis on integrating intelligence, surveillance, and reconnaissance assets with targeting systems. Such improved targeting support also would help deal with important mobile targets, such as vehicle-mounted surface-to-surface missile launchers, which proved hard to destroy during the Gulf War.

MARITIME THREATS

Potential threats to U.S. forces conducting operations in littoral areas include antiship cruise missiles (ASCMs), naval mines, and diesel-electric submarines. Antiship cruise missiles—launched from the air, land, or sea—are becoming increasingly available throughout the world. The limited time available to react to them, once airborne, could pose difficulties for existing anti-air defenses, particularly in littoral operations where naval forces may be patrolling very close to the shore. A number of countries in regions vital to American interests possess advanced ASCMs.

Diesel-electric submarines also constitute a growing threat. Employing the latest advances in propulsion and armament, these forces can be difficult to detect and counter in shallow waters. Many navies now operate advanced diesel subs, and additional countries could well follow suit.

Naval mines are inexpensive, easy to store, and rapidly deployable. These systems provide a potentially effective way to delay, or even deny, accomplishment of U.S. maritime objectives. They range in type and capability from primitive moored contact mines to sophisticated bottom and rising warhead mines, which are difficult to detect and neutralize and are triggered by acoustic and/or magnetic signatures of passing ships. Most littoral nations possess at least a rudimentary mining capability, raising the possibility that U.S. forces could encounter a significant mine threat in future contingencies.

GROUND THREATS

The threat of coercion and large-scale, cross-border aggression by hostile states with significant military power continues to pose a danger to the vital interests of the United States, its allies, and regional security partners. Several highly capable weapon systems are available and affordable to regimes that are unstable or hostile to U.S. interests. Examples include lightweight anti-aircraft and antitank missiles, tactical ballistic missiles with improved guidance and payload technologies, modern battle tanks with day-and-night optics, passive defense systems capable of interfering with precision-guided munitions, active defense systems that redirect or destroy incoming projectiles, advanced antitank guided missiles capable of top attacks against tank turrets, and advanced artillery munitions.

Increasingly capable and violent terrorist groups, drug traffickers, and international crime organizations directly threaten the lives of American citizens and undermine U.S. policies and alliances. Although irregular forces will be unable to match the combat power of heavy U.S. weaponry, they could still pose difficult challenges to U.S. forces. The proliferation of modern light arms, a fighting style that could necessitate operations in dense urban environments, and the ability of indigenous forces to conceal themselves within civil populations could negate some of the advantages of U.S. heavy weaponry.

NUCLEAR, BIOLOGICAL, AND CHEMICAL WEAPONS

The threat of hostile nations or terrorists using NBC weapons against U.S. military or civilian targets, or against U.S. friends and allies, has been growing. More than 20 countries currently possess or are

developing NBC weapons and the means to deliver them. It is therefore increasingly important that U.S. forces be able to operate effectively despite the presence, threat, or use of chemical and biological weapons by an adversary. Toward that end, the Department has doubled its expenditures on chemical and biological defense programs over the past five years, and now commits approximately \$1 billion annually to such initiatives. Details on these programs are provided in Chapters 2, 6, 7, and 9.

FORCE STRUCTURE

Key elements of the conventional force structure are shown in Table 5-1.

Table 5-1 Conventional Force Structure Summary, End-FY 2001	
Army	
Active Corps	4
Divisions (Active/National Guard)	10/8
Active Armored Cavalry Regiments	2
Enhanced Separate Brigades (National Guard)	15
Separate Brigades (National Guard)	3
Navy	
Aircraft Carriers	12
Air Wings (Active/Reserve)	10/1
Amphibious Ready Groups	12
Attack Submarines	55
Surface Combatants (Active/Reserve)	108/8
Air Force	
Active Fighter Wings	12+
Reserve Component Fighter Wings	7+
Reserve Component Air Defense Squadrons	4
Bombers (Total Inventory)	208
Marine Corps	
Marine Expeditionary Forces	3
Divisions (Active/Reserve)	3/1
Air Wings (Active/Reserve)	3/1
Force Service Support Groups (Active/Reserve)	3/1

AVIATION FORCES

Aviation forces of the Air Force, Navy, and Marine Corps—composed of fighter/attack, conventional bomber, and specialized support aircraft—provide a versatile striking force capable of rapid employment worldwide. These forces can quickly gain and sustain air superiority over regional aggressors, permitting rapid air attacks on enemy targets while providing security to exploit the air for logistics, command and control, intelligence, and other functions. Fighter/attack aircraft, operating from land bases and aircraft carriers, establish air superiority and attack ground and ship targets. Conventional bombers supplement tactical air forces by providing an intercontinental capability to strike surface targets on short notice. The specialized aircraft supporting these operations perform functions such as surveillance, airborne warning and control, air battle management, suppression of enemy air defenses, reconnaissance, and combat search and rescue. In addition to these forces, the U.S. military operates a variety of transport planes, aerial-refueling aircraft, helicopters, and other support aircraft. Descriptions of those systems are provided in the sections on mobility and land forces.

FIGHTER/ATTACK AIRCRAFT

The Air Force, Navy, and Marine Corps keep a portion of their tactical air forces forward deployed at all times. These forces can be augmented, as needs arise, with aircraft based in the United States. The Air Force is capable of deploying significant forces on an expeditionary basis to locations where runways and limited support are available. Navy and Marine air wings similarly can be employed in distant contingencies on very short notice; these forces provide a unique ability to carry out combat operations independent of access to regional land bases. In addition, the Marine Corps has the ability to establish limited basing facilities for fighter/attack aircraft at unprepared sites, employing lightweight metal matting, catapults, and arresting gear.

The aviation combat force structure consists of 20.2 Air Force fighter wing-equivalents (FWEs) with 72 aircraft each; 11 Navy carrier air wings, operating 46 fighter/attack aircraft apiece; and four Marine air wings, which are task organized and include varying numbers and types of aircraft. Tables 5-2, 5-3, and 5-4 show the composition of Air Force, Navy, and Marine Corps air wings programmed for the end of FY 2001.

Table 5-2 Composition of Air Force Wings, End-FY 2001 (Fighter/Attack Aircraft)				
Aircraft Type	Mission	Active FWEs	Reserve Component FWEs	Total FWEs
F-15A/B/C/D	Air superiority	3.4	0.6	4.0
F-15E	Multirole ^a	1.8	0	1.8
F-16A/B	Multirole ^b	0	0.4	0.4
F-16C/D	Multirole ^b	5.8	5.2	11.0
F-117	Attack	0.5	0	0.5
A-10	Close air support	1.0	1.4	2.4
Total^c		12.6	7.6	20.2
NOTE: Numbers may not add to totals due to rounding. FWE quantities are based on the combat-coded primary mission aircraft inventory (PMAI) of each unit, which consists of aircraft allocated for the performance of wartime missions. FWE quantities exclude aircraft assigned for other purposes, such as training, testing, and attrition replacement.				
^a Oriented primarily to the air-to-ground role, but also can be used in air-to-air operations.				
^b Can be used in the air-to-air or air-to-ground role.				
^c Excludes OA-10 forward air control aircraft and F-15/16 aircraft assigned to the North American Air Defense Force.				

Table 5-3 Composition of Carrier Air Wings, End-FY 2001 (Fighter/Attack Aircraft)		
Wing Type	Aircraft Type (PMAI per Wing)	Number of Air Wings
Active	F-14 (10/11), F/A-18 (36)	10
Reserve	F/A-18 (48) ^a	1
NOTE: PMAI counts include only Navy F-14s and F/A-18s. The Marine Corps will maintain sufficient active F/A-18 squadrons to ensure 36 F/A-18s per deployed carrier air wing. (Actual numbers based on operating tempo requirements of each Service as determined by the Department of the Navy Tactical Aircraft Consolidation Plan.)		
^a Includes three Naval Reserve squadrons (36 aircraft) and one Marine Corps Reserve squadron (12 aircraft).		

Table 5-4 Composition of Marine Aircraft Wings, End-FY 2001 (Fighter/Attack Aircraft)				
Aircraft Type	Mission	Active PMAI (Squadrons)	Reserve PMAI (Squadrons)	Total PMAI (Squadrons)
F/A-18A/C	Multirole	8	4	12
F/A-18D	Multirole	6	0	6
AV-8B	Close air support	7	0	7
Total		21	4	25
NOTE: Plans call for one Marine F/A-18 reserve squadron to operate as part of the Navy Reserve carrier air wing.				

The Air Force will complete its transition to the new expeditionary deployment concept in FY 2001. In October 1999, the Air Force began to recast its operational deployment planning for the majority of its nonnuclear forces. Under this new approach, fighter/attack aircraft and selected additional force elements have been grouped into 10 Aerospace Expeditionary Force (AEF) packages for deployment planning purposes. The goal is to enhance the predictability of deployments and to improve the quality of life for Air Force personnel by minimizing unexpected contingency deployments. Each AEF unit is prepared to deploy for a 90-day period on a fixed, 15-month cycle. Although a given unit may not actually be called on to deploy, it will remain ready to move on short notice throughout its designated period of availability.

Although individual AEFs may differ in composition, each is intended to provide comparable combat power to theater commanders. Each AEF will provide air superiority, ground attack, command, control, intelligence, surveillance, and reconnaissance capabilities for sustained operations. Additional AEFs would be deployed in the event a contingency escalated into a major theater war.

Through the expeditionary concept, the Air Force will be able to substantially improve the way it packages forces for deployment. This gain will be realized without corresponding changes in force levels or force structure. No new command structure has been created. Unit identities, basing locations, and readiness levels remain as before. While there may be some adaptations in training sequences, such adjustments will be identified and refined as the concept is put into practice and evaluated.

As noted above, each AEF unit is made up primarily of fighter/attack and selected support elements. Although airlift, tanker, and low-density/high-demand forces (such as command and control aircraft) have not been designated as AEF components, the Department is evaluating possible future options to limit deployment pressures on these forces. In particular, further initiatives to better manage E-3 Airborne Warning and Control System deployments are being examined.

CONVENTIONAL BOMBERS

Conventional bombers perform missions spanning the full spectrum of operations. For example, during Operation Allied Force, B-2 bombers were used to deliver precision munitions against sensitive ground targets. B-1 and B-52 bombers also were employed throughout the operation.

In a major theater war, bombers would deliver large quantities of unguided general-purpose bombs and cluster munitions against area targets, such as ground units, airfields, and rail yards. Bomber forces also would play a key role in delivering precision-guided munitions (including cruise missiles) against point targets, such as command and control facilities and air defense sites.

The ability of these forces to have an immediate impact on a conflict by slowing the advance of enemy forces, suppressing enemy air defenses, and inflicting massive damage on an enemy's strategic infrastructure will expand dramatically as new munitions are deployed. More advanced weapons now entering the inventory or in development will enable bomber forces to bring a wider range of targets under attack, while taking advantage of the bombers' large payloads. The rapid-response, long-range capability provided by bombers could make them the first major U.S. weapon system on the scene in a fast-breaking crisis. For remote inland targets, bombers could be the only weapons platform capable of providing a substantial response.

The bomber inventory currently includes 208 aircraft—94 B-52s, 93 B-1s, and 21 B-2s. Of these, 44 B-52s, 52 B-1s, and 16 B-2s are primary mission aircraft, fully funded in terms of operations and maintenance, load crews, and spare parts, and ready for immediate deployment. An additional 12 B-52s are held ready for nuclear missions. All B-52s and B-1s in the inventory, including those in attrition reserve, will be kept in flyable condition and will receive planned modifications. B-1 primary mission aircraft are slated to increase in number over the next several years; the entire B-1 force will be able to employ the increasingly capable conventional weapons entering the inventory in the near future. Bombers will be an integral part of the expeditionary air force, with both B-1s and B-52s available for AEF deployments.

SPECIALIZED AVIATION FORCES

Specialized aviation forces play a critical role in most military operations. Three of their most important missions are suppression of enemy air defenses (SEAD); aerial intelligence, surveillance, and reconnaissance (ISR); and combat search and rescue (CSAR). Airborne SEAD forces locate and neutralize enemy air defenses, thus permitting a wide range of friendly air operations to be conducted. Airborne ISR forces provide critical information on enemy air and surface forces and installations. These forces bridge the gap in coverage between ground- and space-based surveillance systems and the targeting systems on combat aircraft. Airborne reconnaissance systems fall into two categories: standoff systems, which operate outside the range of enemy air defenses; and penetrating systems, which operate within enemy air defense range. Combat search and rescue forces are used to recover downed combat aircrews and other isolated personnel from hostile territory and return them to friendly control. Table 5-5 summarizes force levels for these aircraft programmed for the end of FY 2001.

Table 5-5 Specialized Aviation Forces, End-FY 2001	
Electronic Warfare	
EA-6B	104
EC-130H	13
Airborne Reconnaissance and Surveillance Systems	
<i>Standoff</i>	
E-2C ^a	61
E-3 ^a	24
E-8 ^b	11
U-2 ^{b,c}	27
RC-135 S ^d /U ^e /V ^c /W ^c	21
EP-3 ^c	12
RC-12 Systems ^c	4
RC-7 (ARL)	7
<i>Penetrating^b</i>	
F-14 (TARPS)	46
F-16 (TARS)	20
F/A-18D (ATARS)	24
Pioneer UAV Systems ^f	4
Predator UAV Systems ^f	10
Shadow Tactical UAV Systems ^f	3
Hunter Tactical UAV Systems ^f	1
Global Hawk UAVs (ACTD residual assets) ^f	4
Combat Search and Rescue^g	
HH-60	72 ^h
HC-130	32 ⁱ
<p>NOTE: Force counts represent PMAI totals.</p> <p>^a Performs airspace surveillance, early warning, and fighter control.</p> <p>^b Performs ground reconnaissance.</p> <p>^c Conducts signals intelligence. Each RC-12 system consists of eight or more aircraft and associated ground support personnel and equipment.</p> <p>^d Conducts measurement and signature intelligence (three aircraft).</p> <p>^e Conducts electronic intelligence (two aircraft).</p> <p>^f Each UAV system contains three or more air vehicles.</p> <p>^g Forces shown are specialized Air Force units. Other Air Force, Navy, and Marine aviation forces are allocated temporarily to CSAR tasks as required.</p> <p>^h Includes 36 reserve component aircraft.</p> <p>ⁱ Includes 21 reserve component aircraft.</p>	

AVIATION WEAPONS

The decades-long promise of precision munitions is being realized. U.S. aviation forces can now hit, precisely, any set of coordinates, thus putting at risk most identifiable targets. (Some hardened or mobile targets will remain a challenge.) The enhanced attack capability provided by precision munitions places a premium on ISR assets, including communication and targeting support for strike operations. The operational benefits afforded by these munitions include:

- Neutralization or reduction of the effectiveness of enemy antiaircraft systems. This helps reduce aircraft losses and speeds the follow-on use of direct attack weapons, which are less expensive than standoff munitions.
- The ability to attack highly defended targets from the outset of hostilities, without having to sequentially destroy a series of peripheral defenses.
- The extension of the effective reach of combat aircraft, enabling attacks to be launched from positions well beyond enemy air defense range.

Inventories of air-to-air munitions also are benefiting from the introduction of upgraded systems. New variants of existing missiles, now in production or under development, incorporate significant improvements in lethality and range, making these weapons more effective across a larger engagement area.

NAVAL FORCES

The diverse roles played by naval forces in support of the defense strategy drive their overall size and structure. Forward presence requirements and peacetime and crisis response operations, in particular, are major determinants of naval force needs.

The key components of the maritime force structure are aircraft carriers, amphibious ships, attack submarines, surface combatants, mine warfare ships, and ballistic-missile submarines (discussed in the Nuclear Forces chapter). In addition, the force includes maritime patrol aircraft and sea-based helicopters, as well as ships that perform support and logistics functions.

The maritime force numbers 317 ships (see Table 5-6). Included within this total are 12 aircraft carrier battle groups (CVBGs), 12 amphibious ready groups (ARGs) comprising 38 active-force ships, 116 surface combatants, 55 attack submarines, and associated logistics and support forces. Together, these forces provide a diverse mix of sea-based capabilities for conducting peacetime, crisis-response, and major contingency operations.

Table 5-6 Naval Force Levels, End-FY 2001	
Ballistic-Missile Submarines	18
Aircraft Carriers	12
Attack Submarines	55
Surface Combatants	108/8
Amphibious Ships	38/1
Mine Warfare Ships	12/6
Logistics Force Ships/Support Force	59
<i>Total Battle Force Ships</i>	<i>317</i>
Selected Maritime Aircraft	
Maritime patrol aircraft squadrons	12/7
LAMPS helicopter squadrons	12/1
NOTE: Entries with two numbers separated by a slash give active and reserve force counts.	

Carrier battle groups typically consist of a carrier, its air wing, surface combatants, attack submarines, and combat logistics support ships. Each ARG nominally comprises a large-deck amphibious assault ship, a transport dock ship, a dock landing ship, and an embarked Marine Expeditionary Unit (Special Operations Capable), or MEU(SOC). Until late 1998, the Navy deployed a CVBG and an ARG about 75 and 80 percent of the time, respectively, in the Mediterranean; about 75 and 50 percent of the time, respectively, in the Indian Ocean; and on a nearly continuous basis in the western Pacific. Since 1999, a CVBG has been deployed in the Southwest Asian region on a nearly continuous basis to support contingency operations. Maintaining a continuous presence in that theater has been accomplished by adjusting CVBG deployments in other regions. Plans call for a CVBG to remain on continuous deployment in Southwest Asia in the near term, thus obviating the need for the Air Force to provide AEFs to fill any gaps in CVBG presence. In the other two theaters, where a CVBG or ARG is not constantly on patrol, one of those forces is located within a few days' transit time of the region and can be dispatched promptly if circumstances require.

AIRCRAFT CARRIERS

In addition to their presence and crisis-response capabilities, aircraft carriers provide a forward base for conducting air operations in littoral areas. Operating independent of land-basing restrictions, carriers provide support facilities for joint operations. Their presence in a conflict theater enables attack, surveillance, air defense, and electronic warfare missions to be conducted against naval, air, and ground targets from points well beyond the shore. The defense program supports an aircraft carrier force structure of 12 fully deployable units. The carrier force currently consists of nine nuclear-powered vessels—eight CVN-68 Nimitz-class ships plus the Enterprise (CVN-65)—and three conventionally-powered units. The newest Nimitz-class carrier, the Ronald Reagan (CVN-76), will join the fleet in FY 2003, replacing the

Constellation (CV-64). At that point, two conventionally-powered carriers—Kitty Hawk (CV-63), stationed in Yokosuka, Japan, and the John F. Kennedy (CV-67)—will remain in the fleet. The Kitty Hawk is slated to be retired in FY 2008, when CVN-77 enters service. The first of the Nimitz-class follow-on ships, designated CVNX, will enter construction in FY 2006 and join the fleet around FY 2013, replacing the Enterprise (CVN-65). The second CVNX will replace the John F. Kennedy about five years later.

AMPHIBIOUS FORCES

Forward-deployed naval expeditionary forces with embarked Marines provide joint capabilities for presence, crisis-response, humanitarian relief, peacekeeping, and major contingency operations. Amphibious forces are typically employed in three-ship ARGs. A vital component of the maritime force structure, ARGs provide the ability to project forces into littoral regions rapidly from points over the horizon, utilizing both air and surface platforms.

The defense program sustains a 12-ARG force (plus additional ships in reduced operating status). Together, these vessels are capable of supporting three forward-deployed Marine expeditionary units in peacetime and lifting the equivalent of 2.5 Marine expeditionary brigades (MEBs) in wartime.

ATTACK SUBMARINES

The attack submarine (SSN) force plays a vital role in maritime operations. The increased emphasis on regional contingencies has shifted the focus of SSN missions from open-ocean antisubmarine warfare (ASW) to intelligence and surveillance, power projection, support of special operations, and ASW in littoral environments. SSNs are uniquely suited to littoral operations by virtue of their ability to gather surveillance data, perform crisis response missions, conduct strike operations, and protect carrier battle groups and amphibious forces in forward areas. The SSN force currently includes 55 submarines.

SURFACE COMBATANTS

Surface combatants provide multimission capabilities for operations in littoral environments. The surface combatant force comprises modern cruisers and destroyers equipped with standoff strike weapons, anti-air missiles, guns, and ASW torpedoes, as well as older frigates and destroyers with many of these capabilities. Surface combatants protect carrier battle groups and ARGs, and sustain a presence in areas where full battle groups may not be available. They also provide naval surface fire support, long-range strike capability (using Tomahawk cruise missiles), and integrated theater air defense capabilities.

The defense program maintains a surface combatant force of 116 ships, including 108 ships in the active inventory and eight in the reserves.

COMBAT LOGISTICS FORCE

The combat logistics force provides extensive at-sea replenishment for ships deployed in forward areas. The force includes station ships, which support in-theater operations, and shuttle ships, which ferry material continuously from shore to sea. The station-ship force consists of AOE-1-class and AOE-6-class fast combat support ships. The shuttle-ship force comprises a civilian-manned Military Sealift Command (MSC) fleet of oilers (T-AO), dry stores ships (T-AFS), and ammunition ships (T-AE). Advanced Dry Cargo Ships (T-ADC(X)), planned for deployment around the middle of the decade, will replace aging

T-AE and T-AFS vessels on a less than one-for-one basis. When teamed with a T-AO, the T-ADC(X) will provide dry-cargo capability equivalent to that of an AOE-1-class vessel.

MARITIME PATROL AIRCRAFT

Maritime patrol aircraft (MPA) conduct antisubmarine, antiship, and other surveillance missions, as well as mining operations, in support of task groups at sea and forces ashore. The MPA force comprises 228 P-3C aircraft, organized into 12 active and seven reserve squadrons. The defense program continues the transition of this land-based force from open-ocean to littoral operations, while employing MPA capabilities to offset reductions in S-3 force levels and missions.

Carrier-based fixed-wing S-3B aircraft conduct antiship, surveillance, and refueling missions in support of CVBGs. Plans call for F/A-18E/F fighter/attack aircraft to provide carrier-based refueling capability after the S-3Bs are retired.

LIGHT AIRBORNE MULTIPURPOSE SYSTEM

Light Airborne Multipurpose System (LAMPS) MK III SH-60B helicopters, operating from surface warships, provide extensive antiship and antisubmarine capabilities for maritime engagements. Increased reliance is being placed on these helicopters as the ASW mission of the fixed-wing S-3 force is assumed by other CVBG assets. LAMPS helicopters are used to deploy torpedoes, sonobuoys, and antiship missiles; to process magnetic anomaly detector information; and to conduct reconnaissance missions.

LAND FORCES

The diverse and complementary mix of capabilities provided by the Army and Marine Corps gives military commanders a wide range of options for conducting ground missions. The Army provides forces for sustained combat operations on land, as well as for power projection and forcible-entry operations. The Marine Corps, as an integral part of the nation's naval forces, provides expeditionary forces capable of projecting combat power ashore and conducting forcible-entry operations in support of naval campaigns or as part of joint task forces. Operationally, joint force commanders employ land forces in close coordination with aviation and naval forces.

ARMY

The Army maintains four active corps headquarters, 10 active divisions (six heavy and four light), and two active armored cavalry regiments. Light forces—airborne, air assault, and light infantry divisions—are tailored for forcible-entry operations and for operations on restricted terrain, like mountains, jungles, and urban areas. Heavy forces—armored and mechanized divisions equipped with Abrams tanks, Bradley fighting vehicles, Apache attack helicopters, and the Paladin field artillery system—are trained and equipped for operations against armies employing modern tanks and armored fighting vehicles. Light and heavy forces can operate independently or in combination, providing the mix of combat power needed for specific contingencies.

Through the force transformation initiative, introduced in 1999, the Army is undertaking a major modernization of its force structure and equipment, with a goal of fielding more mobile and lethal forces in both the near and long term. The transformation schedule calls for the immediate creation of new, more responsive brigades. Off-the-shelf medium armored vehicles, to be procured beginning in FY 2001, will

equip these brigades until technology allows for the development of a new family of combat vehicles. The long-term goal is to erase the distinction between traditional heavy and light forces, thereby creating a standard force (termed the Objective Force) for the entire Army that is both more responsive and more capable.

Implementation of redesigned heavy Army divisions has resulted in the following changes: one less combat company per combat battalion, a dedicated reconnaissance troop assigned to each brigade, a shift of organic combat service support assets from combat battalions to forward support battalions, and an increased emphasis on command, control, and information support structures. The Total Army Analyses for FY 2003 and FY 2005 identified adjustments to the support needed to sustain Army combat forces across the range of military operations. As a result, the Army is taking steps to convert lower-priority support and combat units to higher-priority support units. Furthermore, through the FY 2007 Total Army Analysis and other ongoing initiatives, the Army continues to refine reserve component roles and missions in support of the National Military Strategy.

The Army National Guard comprises 350,000 soldiers, organized into 15 enhanced separate brigades, eight combat divisions, three separate brigades, and various support units for divisions, corps, and theaters. The Army Reserve numbers 205,300 soldiers, assigned primarily to combat support and combat service support units. Table 5-7 summarizes the Army force structure programmed for the end of FY 2001.

Table 5-7 Army Force Structure and End-Strength, End-FY 2001	
Active Component	
Divisions	10
Armored cavalry regiments	2
End-strength	480,000
Army National Guard	
Divisions	8
Separate brigades ^a	18
End-strength	350,088
Army Reserve	
End-strength ^b	205,300
^a Fifteen are enhanced separate brigades.	
^b Includes all functional areas of combat, combat support, and combat service support.	

MARINE CORPS

Marine units are employed as part of Marine Air-Ground Task Forces (MAGTFs) consisting of four elements: command, ground combat, aviation combat, and combat service support. A Marine

Expeditionary Force (MEF) is the largest MAGTF organized for combat, comprising one or more divisions, aircraft wings, and force service support groups. The Marine Corps maintains three MEFs in the active force, headquartered in California (I MEF), North Carolina (II MEF), and Okinawa (III MEF). Embarked on amphibious ships, MEU(SOC)s—consisting of about 2,200 Marines and sailors apiece—are task-organized and deployed continuously in or near regions of vital U.S. interest. These forces provide a swift and effective means of responding to fast-breaking crises and can remain on station for extended periods of time, ready to intervene or take action if needed. Over the past several years, the Marine Corps has closely integrated its reserve force with the active component, providing specific units to augment and reinforce active capabilities.

In addition to these general-purpose forces, the Marine Corps has formed and employed a significant special capability in its Chemical/Biological Incident Response Force (CBIRF). The CBIRF is designed to provide a rapid initial response to chemical/biological incidents.

Table 5-8 summarizes the Marine Corps force structure programmed for the end of FY 2001.

Table 5-8 Marine Corps Force Structure and End-Strength, End-FY 2001	
Active Component	
Divisions	3
Wings	3
Force service support groups	3
End-strength	172,600
Reserve Component	
Division	1
Wing	1
Force service support group	1
End-strength	39,209

MOBILITY FORCES

Mobility forces—airlift, sealift, and land- and sea-based prepositioning—move military personnel and materiel to and from operating locations worldwide. These forces include transport aircraft, cargo ships, and ground transportation systems operated by the Defense Department and commercial carriers. By relying on commercial resources to augment military mobility systems, the Department maximizes the efficiency with which it can deploy and support forces abroad, while avoiding the prohibitive cost of maintaining military systems that duplicate capabilities readily attainable from the civil sector.

Airlift aircraft provide for the rapid deployment of troops and materiel to overseas operating locations. Sometimes employed in conjunction with prepositioning, airlift delivers the forces needed in the critical early days of an operation. DoD has established an intertheater airlift objective of about 50 million ton-miles per day (MTM/D) of cargo capacity. Of that amount, about 20 MTM/D will be provided by

commercial aircraft, which contribute to military missions as participants in the Civil Reserve Air Fleet (CRAF). The remaining 30 MTM/D of intertheater airlift capacity will come from military aircraft, which are designed to perform missions that cannot be flown by commercial planes. The Department will have an organic strategic airlift capacity of 27 MTM/D at the end of FY 2001.

Sealift contributes primarily to the movement of combat equipment and other cargoes, delivering the majority of the materiel needed to sustain deployed forces over time. DoD will attain a surge sealift capacity equal to its goal of 9.6 million square feet by the end of FY 2001. Surge sealift capacity is provided by fast sealift ships, large medium-speed roll-on/roll-off (LMSR) vessels, and the Ready Reserve Force (RRF).

Prepositioning military equipment and supplies near potential conflict regions reduces response time in contingencies. With material stored on land or afloat at overseas locations, only personnel and a relatively small amount of equipment need be airlifted to a theater at the outbreak of a crisis. Objectives for prepositioning are based on those forces required very early in a conflict to halt an enemy's advance.

AIRLIFT FORCES

Military airlift forces provide a range of capabilities not attainable from civil aircraft. Features unique to military transport aircraft include the ability to land at austere or unimproved airfields; air drop cargo and personnel; unload cargo rapidly, even at airfields lacking materiel-handling equipment; and carry outsize loads, such as Patriot missile systems, tanks, or helicopters. Of the cargo that must be airlifted in the early stages of a conflict, more than half is too large to be accommodated by even the biggest commercial cargo planes and must therefore be transported by military aircraft. At the end of FY 2001, the military airlift fleet will consist of 58 C-17s, 88 C-141s, 104 C-5s, and 418 C-130s (all figures denote aircraft assigned for performance of their wartime missions). Active, Air National Guard, and Air Force reserve squadrons operate these aircraft.

Commercial aircraft augment military airlift forces in moving troops and standard-sized cargo. Through the CRAF program, the Department gains access to commercial passenger and cargo planes in times of crisis. In return for their participation in CRAF, carriers are given preference for the Department's peacetime passenger and cargo business. CRAF forces are mobilized in three stages, giving DoD access to approximately 60 percent of the passenger capacity in the long-range U.S. commercial fleet and nearly 75 percent of the cargo capacity. In the most demanding deployment scenarios, commercial aircraft would move nearly all of the personnel and more than one-third of the cargo airlifted to a conflict theater.

SEALIFT FORCES

Sealift forces carry the full range of combat equipment and supplies needed to support military operations abroad. These forces include three major types of vessels: containerships, used primarily to move supplies; LMSRs and other roll-on/roll-off (RO/RO) ships, which move combat equipment; and tankers, used to transport fuels.

Sealift capacity comes from three sources: government-owned ships supporting the prepositioning program or maintained in reserve status, commercial ships under long-term charter to the Defense Department, and ships operating in commercial trade.

- The majority of government-owned ships are maintained in the Ready Reserve Force. This 72-ship fleet is composed primarily of RO/RO vessels, breakbulk ships, and tankers held at various levels of readiness. More than half of the ships are able to get underway in four to five days; the remainder can be readied for service in 10 or 20 days.
- Augmenting the Ready Reserve Force are eight fast sealift ships and two hospital ships. The fast sealift ships can begin loading on four days' notice, while the hospital ships can be readied for deployment in five days.
- LMSRs support both the prepositioning program and surge sealift. Once the full 20-ship LMSR fleet is deployed, these vessels will provide nearly all of the afloat prepositioning space required for Army unit equipment and approximately one-third of surge sealift capacity. Fifteen LMSRs have been delivered to date, and five additional ships are scheduled for delivery over the next two years. One LMSR, slated for deployment with the Maritime Prepositioning Force (MPF), will be configured specifically to carry Marine Corps equipment.
- To support peacetime operations, the Department charts dry cargo ships and tankers from commercial operators. These ships transport military cargo to locations not normally served by commercial routes.
- The U.S.-flag commercial fleet contains 192 ships with military utility. These include 107 dry cargo ships, 84 tankers, and one passenger ship. Another 175 commercial vessels that could contribute to military missions—81 dry cargo ships, 84 tankers, and 10 passenger ships—are maintained in the Effective U.S. Control (EUSC) fleet. These ships are owned by U.S. companies or their foreign subsidiaries and are registered in nations whose laws do not preclude the ships' requisitioning for military operations.

A number of the commercial vessels listed above can be made available for military contingencies under the Voluntary Intermodal Sealift Agreement (VISA), maintained by the Departments of Defense and Transportation with commercial cargo carriers. VISA provides access to commercial shipping capacity and to the intermodal capabilities of commercial carriers, such as rail, truck, and pier facilities. As with the CRAF program for airlift, VISA is structured to make sealift available in three stages.

AERIAL-REFUELING FORCES

Aerial-refueling, or tanker, forces extend the range of military aircraft by enabling these planes to be refueled in flight. The long-range tanker force consists of 472 KC-135 and 54 KC-10 Air Force primary mission aircraft. In addition to operating in the tanker role, both the KC-135 and KC-10 can be employed as passenger or cargo transports, with the KC-10 possessing a significant capability to perform tanker and airlift missions simultaneously.

Operating from bases throughout Europe, U.S. tanker forces played a crucial role in refueling combat aircraft during Operation Allied Force. In addition, tankers formed an air bridge between the United States and Europe, enabling other military aircraft to fly nonstop from U.S. bases to destinations throughout the area of operations.

PREPOSITIONING PROGRAMS

The United States stores a variety of combat equipment and supplies at selected locations abroad. These stocks, maintained ashore and afloat, dramatically reduce the time required to deploy forces as well as the number of airlift sorties needed to move them.

Land- and sea-based prepositioning provide complementary capabilities for supporting military operations. Land-based prepositioning enhances crisis responsiveness in specific theaters and is the most economical way of maintaining materiel abroad. Afloat prepositioning, while more expensive, provides the flexibility to relocate stocks quickly within and between theaters to meet the demands of particular operations.

Land-Based Prepositioning. Land-based prepositioning programs are maintained in Europe, Southwest Asia, and the Pacific region. In Europe, the Army stockpiles equipment for three heavy brigades—two in central Europe and one in Italy. The Marine Corps stores equipment and 30 days of supplies for the lead echelon of a MEF in Norway. In addition, the Air Force maintains six air base support sets—temporary shelters for early-arriving air base personnel—at a site in Luxembourg.

In Southwest Asia, the Army stocks equipment for two heavy armor brigades. One brigade set is prepositioned in Kuwait, and the other set (which includes equipment to support a division headquarters) is located in Qatar. The Air Force stores air base operation sets in the region, many of which are being used to support contingency operations.

In Korea, the Army stockpiles equipment for a heavy armor brigade. The Air Force stores eight air base support sets in Korea to meet surge-billeting requirements.

Sea-Based Prepositioning. Sea-based prepositioning programs support all four Services. The Department uses a mix of government-owned ships and commercial vessels to stockpile materiel at sea. Army equipment and supplies are carried aboard a fleet of chartered vessels, LMSRs, and an RRF ship. Stationed in the Indian and Pacific Oceans, these ships provide materiel for an armor brigade and selected combat support and combat service support units. Additionally, the fleet carries Army watercraft for port-opening operations. Plans call for an additional Army brigade set to be prepositioned afloat in the near term.

Marine Corps equipment and supplies are carried on 14 vessels operating with the Maritime Prepositioning Force. The ships are organized into three squadrons, each capable of supporting a 17,300-person MEB for 30 days. The squadrons are stationed in the western Pacific, Indian Ocean, and Mediterranean Sea. Plans call for two new vessels to be added to the MPF in the near term. These ships, converted specifically for MPF operations, will be allocated between two MPF squadrons.

The sea-based prepositioning force also includes three chartered ships carrying Air Force munitions. Additionally, an RRF tanker and two RRF ships specially equipped to transfer fuel directly ashore are

maintained for use by all U.S. forces. Table 5-9 shows the projected inventories for key elements of the military mobility force structure at the end of FY 2001.

Table 5-9 Military Mobility Forces, End-FY 2001	
Airlift (Operational)^a	
C-17	58
C-141	88
C-5	104
C-130 ^b	418
Aerial Refueling (Operational)^c	
KC-135	472
KC-10	54
Sealift	
RRF Ships	72 ^d
Fast Sealift Ships	8
LMSRs	16
MPF (Enhanced) Ships	15
^a The inventory levels shown reflect primary mission aircraft. ^b Does not include 14 aircraft operated by the Navy. ^c These aircraft also perform airlift missions. ^d Excludes four RRF ships tendered to the Military Sealift Command for use in peacetime operations.	

INVESTMENT

The aging of key elements of the U.S. force structure and the increase in asymmetric military threats underscore the need for continued defense modernization. Consistent with this requirement, the defense program:

- Emphasizes acquisition of advanced capabilities in support of *Joint Vision 2020*.
- Maintains annual procurement funding at or above \$60 billion.
- Continues substantial investments in research and development and in science and technology programs in order to incorporate new technologies and techniques that could revolutionize U.S. warfighting capabilities.

Equipment modernization programs, described in the sections below, will be funded in part through cost-saving initiatives being pursued across the Department. Such initiatives include:

- Opening more than 200,000 billets to public-private sector competitions.
- Aggressively pursuing infrastructure reductions.
- Fully implementing acquisition reform initiatives.
- Pursuing business process reengineering, including labor-saving technologies.

AVIATION FORCES

Aviation force modernization is an important part of the Department's overall investment program, constituting more than 10 percent of the funding budgeted for FY 2001.

To realize its full potential, the combat force structure depends upon specified levels of personnel, equipment, and other support. The defense program continues to reinforce these supporting factors. Aircraft maintenance data indicate that the readiness decline of the past decade may have been arrested; more time is needed, however, to identify longer-term trends. Nonetheless, the force continues to grow in average age. Flight training is programmed at levels consistent with goals of the Air Force's Ready Aircrew Program, initiated several years ago to help meet critical readiness needs.

The Air Force continues to implement new measures to bolster recruiting and retention. The goal is to increase the number of enlisted personnel in the three most senior grades, permitting qualified candidates to be promoted to positions offering greater responsibilities. Funding for enlistment and reenlistment bonuses likewise will increase. Expanded bonuses will help not only in retaining today's highly trained personnel but also in attracting the highly qualified service members needed in the future.

The Navy also is taking steps to improve the readiness of its aviation forces. It is placing increased emphasis on F/A-18C/D maintenance and modifications, as well as providing Global Positioning System (GPS) guided weapons capability and additional targeting pods for selected fighter/attack aircraft.

FIGHTER/ATTACK AIRCRAFT

Joint Strike Fighter (JSF). The JSF is the Department's largest acquisition program and one of the most ambitious in concept. This project is intended to provide a family of aircraft for use by the Air Force, Navy, and Marine Corps, produced in variants configured to reflect the Services' individual needs. The JSF will replace the F-16 in the Air Force, the F/A-18C in the Navy, and the F/A-18C/D and AV-8B in the Marine Corps. Through substantial commonality across the Service variants, JSF avoids the need for separate aircraft development programs that would be prohibitively expensive to conduct in parallel. Design commonality also offers the potential to reduce long-term logistics support costs.

The JSF is projected to combine substantial combat mission radius, high survivability against air defenses, and large payloads by capitalizing on technological advances in electronics, materials, and manufacturing processes. While not designed to match the unique capabilities of more specialized aircraft, the JSF will

provide a superior combination of multirole capabilities within affordable limits. Both technical engineering factors and cost control will be key to achieving these program objectives.

The JSF acquisition program comprises three phases—concept development, engineering and manufacturing development (EMD), and production. The concept development phase (CDP) began in 1996 and is scheduled for completion in fall 2001. CDP includes a variety of design and technology development activities intended to reduce program risk. As part of CDP, two contractors—Boeing and Lockheed Martin—are each building two demonstrator aircraft. Each firm will demonstrate the main features of the three JSF variants by reconfiguring one of its two demonstrator aircraft to represent the third variant. Flight tests of the competing designs are now underway; results from the test program will support the selection, later in 2001, of a single contractor to conduct the EMD phase.

The flight-test program will help refine aircraft propulsion integration and flight control design, while ensuring the JSF's suitability for shipboard operations. Construction of the demonstrators also will provide insights into the degree of commonality that can be achieved among JSF variants. Successful completion of the tests will give greater confidence in the subsequent EMD phase. A thorough analysis of alternatives (AoA), currently being conducted by the Department, will be used to support a decision on the aircraft's entry into EMD. Consistent with the revised acquisition profile adopted in 2000, procurement of the first eight JSF aircraft, for the Air Force and Marine Corps, will occur in FY 2006; the aircraft will be delivered in FY 2008. Initial procurement of aircraft for the Navy is planned for FY 2008.

The JSF has attracted significant interest from friendly nations considering potential replacements for their fleets of combat aircraft. The United Kingdom is a full collaborative partner, planning to replace its Royal Navy Sea Harriers and Royal Air Force GR-7 (Harrier variant) aircraft with the short takeoff and vertical landing (STOVL) version of the JSF. Three other nations that have become associate partners—the Netherlands, Norway, and Denmark—are determining whether the JSF could meet their future strike-fighter requirements. In addition, Canada and Italy are monitoring the system's initial development efforts as informed partners.

F-22. The F-22 will replace the F-15C/D in the air-superiority role and will possess substantial air-to-ground capability as well. The F-22 is expected to be even more effective than the F-15 due to its significantly lower radar signature, highly integrated avionics system (for situation awareness and targeting), and superior aerodynamic performance. The F-22's larger wing area, more powerful engines, and superior engine thrust control features all contribute to its improved maneuverability relative to the F-15.

Fight testing of F-22 aircraft continues at Edwards Air Force Base, California. A total of nine aircraft are being built as part of the EMD effort. Aircraft number one completed its aeropropulsion evaluation in 2000 and now is undergoing live-fire ground testing. Aircraft numbers two and three are being used for aerodynamic and propulsion performance testing. The remaining six aircraft joining the flight-test program will incorporate the majority of the F-22's planned avionics equipment and will support signature, avionics, and operational evaluations over the next three years.

Aerodynamic flight testing thus far has been very successful. Approximately 400 test flights have been conducted, totaling over 825 hours in the air. Demonstrated performance includes flight altitudes above

50,000 feet; supercruise capability (supersonic flight without afterburners) above Mach 1.5 speed; and excellent maneuverability. Successful launches of air-to-air missiles have been made from both the main and side weapons bays.

The Department revised the F-22 acquisition strategy in 1999 to reflect congressional action on the FY 2000 program. Beyond the nine EMD aircraft, two production-representative test vehicles (PRTVs) are being produced with FY 1998 and FY 1999 funds. These aircraft are scheduled for delivery in FY 2002. A second lot of six PRTVs will be acquired with research and development funding, as directed by Congress. Advance procurement funds in FY 1999 enabled initial work to begin on the second PRTV lot. About \$723 million was devoted to the PRTV effort during FY 2000, and a further \$704 million will be committed in FY 2001.

F-16s, A-10s, and F-15s. The Department's plan for Air Force fighter/attack aircraft calls for the F-16 multirole fighter force—which constitutes about 50 percent of the force structure—to operate beyond 2010, pending the delivery of replacements from the JSF program. Maintaining force readiness with aircraft whose ages are unprecedented for fighter systems has become an increasing challenge. The Air Force is initiating the Falcon Star program to facilitate the accomplishment of needed structural upgrades for F-16 C and D aircraft. Falcon Star will provide new, detailed assessments of potential F-16 structural problems for use in determining the scope and schedule of the upgrade program. The repair cost for those aircraft determined to need improvements will vary but is expected to be relatively modest, on the order of \$250,000 to \$500,000 a copy.

The Department expects to retain the sturdy A-10 attack force in service well into the 2020s, assuming some future life-extension efforts. As reported in past years, some F-16s and A-10s have been put into long-term storage as a hedge against a possible future need to refurbish operating aircraft. The first lot of 100 early-model F-16s has already been stored. A second lot of 100 aircraft was planned to enter storage in FY 2000, but some of these aircraft are being retained in operational Air National Guard units for a few additional years.

The Department initiated a program in FY 2000 to procure 30 new F-16C/D aircraft in an air defense suppression configuration. Acquisition of these aircraft serves several purposes, most importantly the provision of sufficient air defense suppression aircraft to allocate one squadron to each of 10 AEFs. The first ten aircraft were funded in FY 2000 and FY 2001. Foreign sales in 1999 and 2000, in combination with additional U.S. purchases, will sustain the F-16 in production well into this decade.

The F-15E inventory is being expanded consistent with Congressional direction. A contract was signed in May 2000 for the procurement of five F-15Es authorized in FY 2000. Two additional aircraft will be procured with FY 2001 funds. Current plans call for these aircraft to be added to the backup inventory, potentially extending the length of time that the F-15E force structure can be sustained.

F/A-18E/F. The F/A-18E/F is the Navy's principal fighter/attack aircraft acquisition program. The F/A-18E/F will replace older F/A-18 models and F-14s. In addition to providing improved survivability over earlier F/A-18 versions, the F/A-18E/F will have improved operational utility owing to its increased weapons payload and its ability to conduct carrier landings with heavier loads of unexpended weapons than previous F/A-18 models could accommodate. The E/F version will also increase carrier air-wing

flexibility through its ability to refuel other strike-fighters in flight. Additionally, the F/A-18E/F design provides significant growth potential above and beyond that afforded by older F/A-18 models. The aircraft will incorporate advanced electronic countermeasure systems and significant radar signature reductions and will have the capacity to support a helmet-mounted cueing system and an advanced electronically scanned array radar.

The F/A-18E/F entered procurement in 1997. The first training squadron of 12 aircraft became fully operational in January 2000. Initial operational capability is planned for FY 2001, with the first carrier-based overseas deployment scheduled for FY 2002. Full-rate production will commence in FY 2001. F/A-18E/F support funding provides allowances for targeting systems and electronic countermeasures equipment, as well as sufficient lesser ancillary equipment (such as fuel tanks and bomb racks) for squadrons on overseas deployments and for testing and training.

The F/A-18E/F acquisition plan calls for procurement of between 548 and 785 aircraft, depending on the introduction date and associated production rate of the JSF.

F/A-18C/D. The Department's plan for Navy fighter/attack aircraft calls for the F/A-18C/D force—which constitutes roughly 50 percent of the Navy and Marine fighter/attack force structure—to operate until about 2010. At that point, the aircraft would be phased out of the force, with the last retirement occurring around 2020. Over the past year, however, new structural problems have been identified in F/A-18C/D aircraft. These problems, combined with other structural concerns previously identified, will make it necessary to conduct a comprehensive service life extension program (SLEP) for the F/A-18C/D fleet to sustain the naval aviation force structure. Two factors underlie this situation. First, operating tempo has been increasing faster than projected. Second, analytical models employed during aircraft development failed to fully predict some fatigue problems.

To deal with this challenge, the Navy is implementing two major initiatives. First, it will replace the center fuselage section (the so-called center barrel) as part of the SLEP for the F/A-18C/D fleet. Second, the Navy will conduct a detailed analysis of all fatigue risk areas (not just the center barrel) on F/A-18C/D aircraft. Results from this analysis, expected in late FY 2003, will be incorporated into the service life extension effort.

Current projections suggest that the Navy and Marine Corps will have to conduct SLEP and repair work on about 355 aircraft through FY 2012. Plans call for the equivalent of two to three F/A-18C/D squadrons to be refurbished annually, reflecting both the capacity of repair depots and the need to sustain adequate operational force levels. Aircraft being refurbished will be removed from service for about a year, meaning that force levels would drop without compensatory measures.

Accordingly, the Navy is extending the planned service life of some remaining F-14s, as well as reducing F-14 squadron size from 12 to 10 aircraft. Older F/A-18A/B models will be operated longer than originally planned, while some F/A-18E/F squadrons will be activated earlier than previously scheduled. Overall, the Navy expects to operate the same number of fighter/attack squadrons as previously planned.

AV-8B. The AV-8B remanufacturing program is nearing completion. The Congress added \$52 million in FY 2001 to remanufacture two additional AV-8Bs, bringing the total number of upgraded aircraft to 74.

The remanufactured AV-8Bs will be used to equip seven squadrons. The remaining 118 AV-8Bs are not programmed for remanufacturing, given the pending introduction of replacement JSF aircraft.

Other Marine Corps Fighter/Attack Aircraft. The Marine Corps plans to replace the F/A-18C/D, as well as the AV-8B, with the Joint Strike Fighter. Pending the initial delivery of Marine JSFs near the end of this decade, some Navy F/A-18Cs will be transferred to the Marine Corps. In addition, 24 Marine F/A-18As will be equipped with new computers and sensors, which will enable them to carry modern air-to-air and air-to-ground ordnance. This will leave a balance of 76 Marine F/A-18s in the earlier configuration; these aircraft will be capable of carrying laser-guided (but not GPS-aided) munitions and Sparrow (rather than AMRAAM) medium-range air-to-air missiles.

TRAINER AIRCRAFT

T-2/T-45. The Navy operates a mix of T-2 and T-45 aircraft for advanced training. T-45s are being procured as replacements for some T-2s. The T-6 primary trainer is expected to replace other T-2s in selected training roles in the future.

T-6A. The Air Force and the Navy will continue to acquire the Joint Primary Aircraft Training System (JPATS) and associated T-6A aircraft. JPATS will replace Air Force T-37 and Navy T-34 primary trainers and ground-based training systems. Initial operational capability for the Air Force aircraft will be attained in FY 2001; the Navy aircraft will enter service in FY 2003.

T-38C. The Air Force will continue to modernize its T-38 advanced trainer aircraft through both the Avionics Upgrade Program (AUP) and the Propulsion Modernization Program (PMP). The AUP will update the T-38's 1960s-vintage avionics suite with a system representative of the aircraft for which student pilots are being trained. The PMP will provide improvements in reliability, safety, efficiency, and performance. Structural modifications extending the T-38's service life into the 2020s are nearly complete.

CONVENTIONAL BOMBERS

B-52. The B-52 has both conventional and nuclear missions. Upgrades for the B-52 force will keep it capable of employing the latest munitions and communicating with other forces. B-52s already are capable of carrying the Joint Direct Attack Munition (JDAM), the Wind-Corrected Munitions Dispenser (WCMD), the Sensor-Fuzed Weapon (SFW), and the Joint Standoff Weapon (JSOW). The Joint Air-to-Surface Standoff Missile (JASSM) will also be added to the B-52 weapons suite. The existing ALR-20 radar warning receiver on the B-52, which provides information on enemy electronic emissions, will be replaced with a system capable of recognizing the latest threat signals.

B-1. The B-1 will be the backbone of the future conventional bomber force. Upgrades completed in 1999 provided the B-1 with an advanced navigation system and an improved communications suite. ALE-50 towed decoys are now being fielded on the B-1 force; major enhancements to the aircraft's computers will also be incorporated. The existing ALQ-161 electronic countermeasures system will be maintained while research continues on the B-1 Defensive System Upgrade Program (DSUP), which is a candidate to replace the ALQ-161 over the long term. The B-1 can deliver the entire family of advanced cluster munitions (CBU-87/89/97) as well as MK-82 and MK-84 general purpose bombs, MK-62 mines, and the GBU-31 (JDAM), increasing effectiveness against area targets and vehicles in low-threat environments. WCMD, JSOW, and JASSM will be added to the B-1 weapons suite in the future.

B-2. The B-2 can be used in both the nuclear and conventional role. The stealth features incorporated in this aircraft make it difficult to detect, especially at night and in adverse weather; its ability to penetrate heavy defenses is further enhanced when it is employed with standoff jamming aircraft. All 21 aircraft in the programmed B-2 force have been delivered. The capability of these aircraft grew when they were upgraded from the test configuration and initial Block 10 and Block 20 configurations to the Block 30 design; these modifications were completed in July 2000. Block 30 aircraft incorporate improved stealth features and advanced avionics, and are capable of employing the JDAM, the 4,700-pound GBU-37, and JSOW. JASSM will also be added to the B-2 weapons suite. Planned future upgrades to the B-2 force include the addition of extremely-high frequency (EHF) satellite communications capability, a smart bomb rack, and more robust stealth coatings that require less maintenance.

SPECIALIZED FORCES

Continuing trends of the last several years, the Department's fleets of specialized aircraft remain in high demand, and efforts to expand and enhance these fleets are underway.

Joint Surveillance Target Attack Radar System (JSTARS). The JSTARS system, operated by the Air Force and the Army, locates, identifies, and tracks enemy targets on the ground in support of air and ground operations. The system consists of two primary elements: large transport-class aircraft (E-8s) carrying a powerful multimode radar and systems operators, and mobile Army Common Ground Stations (CGSs) that receive and further exploit the radar data. The FY 2001 budget provided funds to procure a fifteenth production E-8C and to continue the Computer Replacement Program (Block 20) upgrade. The satellite communications (Block 30) development program will be completed in the near term. The previously planned Radar Technology Insertion Program (RTIP) has been restructured into a multi-platform RTIP program that will develop radar variants for E-8s, business jets, and the Global Hawk unmanned aerial vehicle (UAV). The newly structured RTIP program also will include a higher-capacity data link for E-8s and CGSs. The E-8 JSTARS acquisition profile will provide improved radars for five aircraft by FY 2013.

U-2. The Air Force high-altitude U-2 force is receiving several enhancements, most importantly an upgraded radar with greatly improved imagery and moving-target intelligence features. Additionally, the aircraft's electro-optical sensor is being upgraded. Sensor resolution at longer ranges will be improved, as will geolocation accuracy and area coverage. Due to cost growth and schedule slips in the signals intelligence development program, U-2s will not be upgraded with Joint Signals Intelligence Avionics Family (JSAF) equipment. In view of the Global Hawk UAV's successful test program, as well as planned improvements to the Global Hawk system, further upgrades to the U-2 fleet are expected to be modest. U-2s are programmed to continue in service while additional experience is gained with Global Hawk.

UAVs. The Air Force Global Hawk UAV will soon transition from an Advanced Concept Technology Demonstration (ACTD) to a major DoD acquisition program. Global Hawk will carry electro-optical and infrared (EO/IR) sensors, as well as a multimode radar providing both synthetic aperture radar coverage of fixed targets and a moving-target indicator for mobile targets. Global Hawk performed well during operational demonstrations in FY 2000, leading to a positive assessment of its prospective military utility from the joint-service users observing the demonstrations. The Global Hawk post-ACTD program now includes an EMD/low-rate initial production (LRIP) phase, commencing in FY 2001, as well as plans and funding for later improvements. Prospective future additions include JSAF-based signals intelligence

sensors and an advanced multimode radar. Drawing on lessons learned in Kosovo, Air Force Predator UAVs are being upgraded with EO/IR laser range-finder/designator packages.

The Army is funding the acquisition of 44 Shadow UAV systems, each comprising three UAVs. Each UAV will have an EO/IR payload and will be capable of remaining airborne for up to six hours. Programmed improvements include upgraded EO/IR payloads, new data links (Tactical CDL, or TCDL), and Tactical Control System (TCS) software. To compensate for projected attrition, nearly 200 replacement UAVs will be procured. The Army will continue to operate its existing Hunter UAVs until the Shadow system enters service.

The Navy's Fire Scout program will provide vertical-takeoff-and-landing (VTOL) UAVs for employment on ships with small decks and for operation ashore in locations with limited landing facilities, including urban areas. Each UAV will have a combined EO/IR/laser-designator payload and will be capable of undertaking missions of up to seven hours. Each system will incorporate TCDL data links and TCS software. The Navy and Marine Corps will continue to operate the Pioneer UAV until the VTOL UAV enters service.

Standard TCS software and TCDLs, programmed for both Army and Navy UAVs, also are being considered for retrofit on Predator endurance UAVs operated by the Air Force. This addition would enhance the interoperability of UAV systems in joint engagements.

RC-135, EP-3, and Aerial Common Sensor (ACS). The Air Force Rivet Joint (RC-135) fleet, having just been expanded to 16 aircraft, will be provided with an additional training aircraft to permit expanded overseas operations. Due to cost growth and schedule slips in the avionics development program, existing RC-135s will not receive all of the Joint Signals Intelligence Avionics Family equipment upgrades. The Department will continue to pursue development of the JSAF, however, to permit any follow-on program to take advantage of its improved capabilities.

The Navy's land-based EP-3 fleet will grow to 14 aircraft with the projected future delivery of aircraft being converted from the P-3C ASW configuration. The entire EP-3 fleet is slated to receive JSAF equipment. Requirements for an EP-3 follow-on program (or a service life extension) are being evaluated as part of the Navy's Broad-Area Maritime and Littoral Armed Intelligence, Surveillance, and Reconnaissance AoA. Similarly, requirements for a follow-on to the Army's RC-12 Guardrail and RC-7 airborne reconnaissance programs are being examined in analyses for an Army Aerial Common Sensor (ACS) program. The ACS also is anticipated to employ JSAF equipment and, if approved for acquisition, would be fielded later in this decade. Coupled with UAVs, these new manned Army and Navy systems could ease the personnel operating tempo concerns that the airborne ISR fleet now faces.

E-3 and E-2C. Installation of upgrades—radar improvements and new passive emitter detection systems—on Air Force E-3 Airborne Warning and Control System (AWACS) aircraft will continue well into the next decade. New E-2Cs for the Navy will be produced initially at a rate of three per year under a multiyear contract extending from FY 1999 through FY 2003. Beginning with FY 2001 deliveries, E-2Cs will be equipped with Cooperative Engagement Capability (CEC) subsystems to improve targeting of missiles and aircraft. Plans call for procurement of 21 CEC-capable E-2Cs, sufficient to support four carrier battle groups. Approaches for sustaining long-term E-2C force levels, considering both new

production and life-extension options, are being evaluated; a decision is expected in 2001. Both the E-3 and E-2C fleets are receiving reliability and maintainability improvements to keep them operating past the year 2010.

EA-6B. EA-6B tactical airborne electronic warfare aircraft will be receiving further capability enhancements, some as a result of experience in Operation Allied Force. The upgrades include provision of an improved avionics package (ICAP III). Plans also call for one additional EA-6B squadron to be formed. Drawing from the existing aircraft inventory through reassignment of selected test aircraft and benefiting from the activation of all previously stored aircraft, the new unit is slated to become operational in FY 2003. Its addition will bring the total number of Navy and Marine Corps EA-6B squadrons to 20; five of the Navy squadrons will be earmarked for land-based expeditionary deployments. Combined with the capability upgrades discussed above, the creation of the new unit will enhance the contribution of the EA-6B force to combat operations. Given the planned retirement of the EA-6B force beginning in 2010–2015, the Department has initiated a joint effort to determine the capabilities that should be developed for a successor system or systems.

HC-130 and HH-60. HC-130 combat search and rescue aircraft are being upgraded with improved defensive, radar, and communications systems. Additionally, the HC-130 force is being expanded to 15 aircraft through the conversion of four WC-130H weather aircraft to the CSAR configuration. HH-60G CSAR helicopters are being modernized through the addition of improved defensive systems and communications gear.

AVIATION FORCE WEAPONS

Advanced Medium-Range Air-to-Air Missile (AMRAAM). The Air Force and Navy will continue procurement of AMRAAM missiles. Performance is being enhanced in a number of areas, including kinematics and lethality.

AIM-9X. The AIM-9X is a new short-range air-to-air missile under development by the Air Force and the Navy. An advanced version of the AIM-9 Sidewinder missile, it combines the AIM-9M's motor, fuze, and warhead with a new seeker and airframe. Other enhancements incorporated in the AIM-9X design include the ability to be cued to a target by a helmet-mounted sight that can align the missile's seeker head with targets well outside the aircraft radar's field of view. The combination of improved missile performance and the new helmet-mounted sight will recover an advantage in close-in combat that was lost several years ago when advanced new foreign systems, such as the Russian AA-11, were deployed. Affordability and growth potential are key tenets of this program. Early testing led to some improvements in component design and production quality that are being proven as flight tests proceed. The system will enter low-rate production during FY 2001; a decision on full-rate production is anticipated in FY 2004.

Joint Air-to-Surface Standoff Missile (JASSM). The JASSM is a new long-range missile designed to have excellent autonomous navigation capability and an autonomous terminal seeker. JASSM's standoff capability will enable U.S. aviation forces to hold highly defended targets at risk while minimizing aircraft attrition. A key goal in the system's development is achieving desired performance while maintaining low unit cost. This Air Force-led joint program is currently in EMD. Initial flight tests revealed a minor design problem (a wing-opening actuator failed), leading to a thorough review of program plans and a subsequent decision to add 10 months to the EMD phase to ensure an acceptable level of risk. Assuming

successful test results, low-rate production will commence in FY 2002. While no Navy procurement for the F/A-18E/F is currently planned, the missile will be considered for future use on both the JSF and F/A-18E/F.

Joint Direct Attack Munition (JDAM). Under the JDAM program, existing general-purpose bombs are being upgraded with an inertial navigation system (INS) coupled to satellite GPS data. INS/GPS guidance will improve bombing accuracy from medium and high altitudes, permitting the delivery of these free-fall munitions in adverse weather. Low-rate production of JDAM tail-kits for MK-84 and BLU-109 warheads began in FY 1997 and FY 1999, respectively; MK-83 tail-kits entered production in FY 2000. The Air Force and Navy are currently developing a variant that incorporates the 500-pound MK-82 warhead. Additionally, under a product improvement program, the Navy and Marine Corps are pursuing development of a JDAM variant with improved accuracy.

Joint Standoff Weapon (JSOW). JSOW is a long-range glide weapon with autonomous navigation ability. Capable of employment in adverse weather, it provides an accurate standoff method of delivering tactical munitions at a relatively low cost. The baseline variant, which entered production in FY 1997, carries combined-effects bomblets for use against area targets. To provide standoff antiarmor capability, the Department began procurement in 1999 of a follow-on version carrying a BLU-108 payload derived from the Sensor-Fuzed Weapon (described next). A third JSOW variant, incorporating a unitary warhead and autonomous seeker for target discrimination, is in development. The unitary variant was redesigned in 1999, enabling a significant reduction in acquisition costs without a decrease in overall effectiveness. Production of the unitary variant is slated to begin in FY 2003.

Sensor-Fuzed Weapon (SFW). Designed for top attacks on enemy armor, the SFW is a tactical munitions dispenser containing 10 BLU-108 submunitions, each with four Skeet warheads. This weapon is capable of achieving multiple kills against armored vehicles during day or night and in adverse weather. Production of an improved BLU-108 submunition will commence in FY 2001. The improved submunition (also planned for use on JSOW) will be much more effective than earlier versions at only a small increase in cost. Enhancements include the addition of an active sensor, a multimission warhead, and expansion of the weapons pattern over the ground by more than 50 percent. These changes will reduce the system's susceptibility to countermeasures and improve its soft-target lethality and coverage, while reducing the impact of target location errors.

Standoff Land Attack Missile (SLAM). The Navy SLAM is a modified Harpoon antiship missile incorporating a GPS receiver, an AGM-65 Maverick imaging infrared seeker, and a Walleye datalink for man-in-the-loop control. An upgraded version of the missile, designated SLAM-ER, provides an approximately 100 percent increase in range over the baseline SLAM system. The ER version also incorporates enhancements in accuracy, anti-jam guidance capability, and hard-target penetration. Improvements in the SLAM-ER's mission planning system will enhance the weapon's ease of employment. SLAM-ER Plus, a variant further enhanced by an automatic target acquisition capability, entered production in FY 1998. Approximately 450 SLAM/SLAM-ER missiles are slated for conversion to the SLAM-ER Plus configuration.

Wind-Corrected Munitions Dispenser (WCMD). The WCMD is a modification kit for advanced cluster bomb dispensers that inertially guides the units to compensate for high-altitude winds, thus improving

delivery accuracy. This modification will be made to the CBU-87 (Combined Effects Munition), CBU-89 (Gator), and CBU-97 (SFW). Delivery of production units began in FY 2000.

NAVAL FORCES

The defense program sustains a broad range of modernization initiatives for naval forces. Programmed investments will add the capabilities needed to counter emerging threats, while providing the mix of ships and supporting systems required for 21st century operations.

The average age of the fleet is currently at an acceptable level. Programmed ship deliveries, combined with deactivations of aging vessels, will keep the fleet's age within acceptable bounds well into the future.

AIRCRAFT CARRIERS

The defense program sustains a force of 12 deployable aircraft carriers. CVN-76, the final Nimitz-class carrier, was funded in FY 2001. CVN-77 will serve as a bridge to the next generation of aircraft carriers, designated CVNX. More than \$200 million of the approximately \$5 billion programmed for CVN-77 through FY 2001 will be used to develop technologies for incorporation into the CVNX class. Some of these technologies also will be considered for backfit into existing Nimitz-class carriers to reduce life-cycle costs.

Funds will be provided in later years for continued research and development, advanced planning and design, and advance procurement of CVNX components. CVNX carriers will be nuclear powered and will each be capable of supporting an air wing of 75 aircraft.

The Navy is developing the new CVNX class through an evolutionary, multicarrier process. Initial technology efforts and new design features, such as a new island and warfare system, will be incorporated into CVN-77. CVNX-1, slated to begin construction in FY 2006, will retain the existing Nimitz hull, while adding a new nuclear power plant and an improved electrical generation and distribution system incorporating major technological advances that facilitate the integration of other capability improvements. For example, a new Electromagnetic Aircraft Launch System is planned for CVNX-1. A new hull design and other, more substantial system changes are being considered for CVNX-2, which is planned for procurement in FY 2011. Through this evolutionary approach, the Navy seeks to develop a class of carriers that will provide improved warfighting capabilities at affordable acquisition and reduced longer-term ownership costs.

AMPHIBIOUS SHIPS

Amphibious lift forces play increasingly important roles in joint operations, reflecting the growing emphasis on regional contingencies, a broader range of peacetime operations, and the rapid-deployment requirements of naval expeditionary forces. The defense program continues a robust modernization of the amphibious force, supporting a long-term goal of maintaining 12 ARGs comprising 36 ships.

The key to modernizing the amphibious force in the near term is the new amphibious transport dock ship, the LPD-17. The addition of 12 of these ships to the fleet will alleviate the current shortfall in vehicle space. The LPD-17 is designed to carry approximately 700 troops and two Landing Craft Air Cushion (LCACs), while providing 25,000 square feet of vehicle stowage space, 36,000 cubic feet of cargo space,

and the capacity to accommodate four CH-46 helicopters or a mixed load of AH-1/UH-1, CH-46, and CH-53E helicopters and MV-22 tilt-rotor aircraft. Four LPD-17s have been procured to date. The lead ship is slated to enter the fleet in FY 2003.

The amphibious assault force is being modernized through the acquisition of LHD-class vessels. Seven of these ships have been procured to date. In preparation for construction of an eighth LHD, design work has begun on a new gas-turbine propulsion system. LHD-8 will replace the first ship of the LHA class. Studies currently underway within the Navy are examining new large-deck amphibious assault ship designs to replace the remaining four LHAs, which will reach the end of their 35-year service lives in 2012–2015.

The defense program continues a service life extension of the LCAC fleet. The SLEP will increase the LCAC's originally planned 20-year operational life to 30 years. A high-speed, fully amphibious landing craft, the LCAC is capable of carrying a 60-ton payload at speeds greater than 40 knots over a range of approximately 200 nautical miles. Carrying equipment, troops, and supplies, the LCAC transits at high speed over the sea and across the beach, quickly offloads its cargo, and then returns to its home ship to take on additional sorties. LCACs provide amphibious task force commanders flexibility in selecting landing sites. Capable of delivering cargo directly onto dry land, they afford access to more than 70 percent of beaches worldwide.

SUBMARINES

The defense program maintains a force of attack submarines sufficient to meet 21st century challenges. Investments in this force focus on acquisition of the new Virginia (SSN-774) class submarine. Incorporating new technologies, including those developed for the Seawolf program, Virginia-class SSNs will be highly effective in performing traditional open-ocean ASW and antisurface missions as well as littoral and regional operations, which will be their primary emphasis. Such operations include standard SSN missions plus mine warfare, special forces insertion/extraction, battle group support, and intelligence-gathering. The Virginia class has been designed to adapt easily to evolving mission requirements.

Virginia-class SSNs are being constructed under an innovative teaming agreement between the nation's two builders of nuclear-powered submarines, Electric Boat Corporation and Newport News Shipbuilding. Under this arrangement, the two firms are alternating assembly of the ships.

Virginia-class submarines will provide affordable replacements for the older 688 SSN class. Their deployment will enhance the operational flexibility of the SSN force, while helping to compensate for scheduled retirements of 688-class submarines. To help maintain the overall force at desired levels until the Virginia class is fully deployed, the defense program anticipates either refueling additional 688-class SSNs or converting as many as four retiring ballistic-missile submarines to a conventional (SSGN) configuration. A decision on this element of the program awaits completion of analyses by the Navy.

SURFACE COMBATANTS

The defense program sustains a modern force of 116 surface combatants. Continued deliveries of new Arleigh Burke-class guided-missile destroyers (DDG-51s) carrying the Aegis weapons system will more than offset the capabilities of older surface combatants programmed for deactivation.

DDG-51 destroyers are equipped with the Aegis weapon system and the SPY-1D multifunction phased-array radar. The DDG-51 combat system includes the Mk-41 Vertical Launching System, advanced antisubmarine and anti-air systems and weapons, and Tomahawk cruise missiles. New DDG-51s, starting with the ships delivered in FY 2002, will provide improved land-attack capabilities as well as area defenses against ballistic and cruise missiles. They will be able to operate independently or as part of carrier battle groups, surface action groups, or ARGs, or in support of underway replenishment groups. The first Flight IIA variant, commissioned in FY 2000, incorporates facilities to support two embarked SH-60 LAMPS helicopters. In addition to bolstering the fleet's sea control capabilities, LAMPS-equipped DDG-51s will provide a highly capable platform for conducting ASW and surveillance missions upon the retirement, later in this decade, of the Navy's carrier-based force of fixed-wing S-3 aircraft. The defense program anticipates procuring the remaining six DDG-51s under a multiyear contract during FY 2002–2005.

The defense program also supports development and procurement of the new DD-21 land-attack destroyer. The DD-21 will provide firepower at long ranges in support of joint operations ashore. With its state-of-the-art information technologies, it will operate in close coordination with other battle group elements, as well as with U.S. ground and land-based air forces. The emphasis on sensor-to-shooter connectivity will provide naval or joint task force commanders the flexibility to counter any maritime threat and destroy a variety of land targets. Moreover, the DD-21 will be difficult to detect by potential adversaries.

The defense program sustains an initiative to gain additional capabilities at low cost from selected CG-47-class cruisers (CG-52 and subsequent ships). Planned modifications include the addition of the Area Air Defense Commander system and area theater ballistic missile defense capability. The upgraded ships also will be capable of employing the new Extended-Range Guided Munition (discussed in the Naval Surface Fire Support section).

COMBAT LOGISTICS

The defense program continues procurement of T-ADC(X) dry-cargo ships. These new multiproduct vessels will replace aging T-AE and T-AFS ammunition and dry cargo ships and AOE-1 fast combat stores ships. They will carry both dry and refrigerated products as well as ammunition and a limited amount of fuel. To improve affordability, the ships are being procured using commercial business and construction practices to the maximum extent possible. A total force of 12 T-ADC(X)s is planned.

COMMAND SHIPS

The Navy is examining alternatives for a new class of joint command ships, designated JCC(X). These ships would replace the current four-ship command fleet, which is nearing the end of its service life. In evaluating designs for a successor system, the Navy is seeking a platform that will be capable of performing joint command and control functions in forward areas. Initial results from internal analyses show that a dedicated at-sea platform could best meet projected operational requirements. The Navy is now determining the most cost-effective approach for implementing the JCC(X) concept.

P-3C MARITIME PATROL AND RECONNAISSANCE AIRCRAFT

Near-term investments in the maritime patrol and reconnaissance (MPR) force focus on sustaining the current fleet of land-based P-3C aircraft, pending deployment of a successor system in the next decade.

Accordingly, the defense program supports a P-3C service life extension as well as a weapon system upgrade (the Antisurface Improvement Program). These enhancements will enable the P-3C fleet to remain operational into the next decade.

An analysis of alternatives for a follow-on MPR capability is underway. Options being investigated for the replacement system include manned aircraft, UAVs, reconnaissance satellites, or some combination of these or other platforms. The MPR follow-on would be deployed around 2015. Funding for an MPR successor system awaits completion of the AoA.

MINE COUNTERMEASURES

The Navy continues to operate dedicated mine countermeasure (MCM) ships, helicopters, and explosive ordnance disposal forces, while developing systems that will be assigned to battle groups and amphibious ready groups and deploy routinely with them. These new organic mine warfare systems will provide airborne, surface, and sub-surface MCM capabilities, allowing the fleet to avoid—or reduce to manageable proportions—mine threats in regional contingencies more quickly than is possible with today's dedicated forces.

WEAPON SYSTEMS

Tomahawk. The Tomahawk cruise missile enables surface combatants and submarines to launch attacks against land targets from long ranges in all types of weather. As demonstrated in Operation Allied Force, Tomahawk missiles provide force commanders with a versatile precision strike capability. To maintain adequate inventories and replenish missiles used in recent operations, the Navy is converting 624 older Block IIC, Block IID, and Tomahawk antiship missiles to the Block IIIC configuration. For the longer term, it is developing an advanced, more affordable version of the Tomahawk system, called Tactical Tomahawk. Enhancements incorporated in the Tactical Tomahawk's design include in-flight retargeting, the ability to loiter over the battlefield and attack emerging targets, and target identification and damage assessment capabilities. In addition, the missile will employ GPS guidance. Plans call for procurement of 1,353 Tactical Tomahawk missiles.

Standard Missiles. The Standard Missile (SM) is one of the primary air defense weapons deployed on U.S. surface ships. The newest variant of the Standard system—the SM-2 Block IVA—has the dual mission of defeating both advanced antiship cruise missiles and theater ballistic missiles. The defense program continues procurement of SM-2 Block IIIB missiles to meet anti-air warfare requirements.

Ship Self-Defense Systems. Modernization of ship self-defense systems continues under the Maritime Force Protection program. This program includes the Evolved Sea Sparrow Missile (ESSM), the Rolling Airframe Missile (RAM), and the Re-architecture NATO Sea Sparrow Missile System. The defense program continues procurement of the ESSM and RAM systems. Reflecting the results of analyses of ship-based radar systems conducted in recent years, the program also supports the development of multifunction and volume search radars, to be installed initially on CVN-77 and the DD-21. These systems are also being considered for backfit on LPD-17 amphibious ships during the next decade.

Cooperative Engagement Capability (CEC). The CEC system collects radar data from multiple ships and aircraft and distributes this information among ships in a battle group. By enabling cruise missiles to be targeted at ranges well beyond ships' radar horizons, CEC significantly enhances sea-based defenses

against advanced cruise missile threats. A series of land-based tests conducted over the past year has explored solutions to problems encountered in integrating CEC with other ship defense systems. The Navy has been fixing interoperability and software maturity problems. CEC is slated for deployment initially on battle group ships; future plans call for the system to be carried by E-2C command and control aircraft as well.

Light Airborne Multipurpose System (LAMPS). The defense program supports initiatives to extend the service life of SH-60B LAMPS helicopters and equip them with improved sensors and weapons. The upgraded helicopters, renamed SH-60Rs, will incorporate a modern dipping sonar, a multimode radar, and other improvements, enhancing their effectiveness and survivability in littoral environments.

The defense program also provides for continued procurement of CH-60S helicopters. A derivative of the SH-60, the CH-60S is primarily a logistics support aircraft. Beginning in FY 2005, the mission of the CH-60S force will be expanded to include mine countermeasures support of battle groups, for which testing is now being conducted.

Naval Surface Fire Support (NSFS). NSFS capabilities are being modernized in order to expand support for the Marine Corps' Expeditionary Maneuver Warfare concept and for joint land-attack operations. The defense program supports development of the Extended-Range Guided Munition (ERGM), which will be able to operate over ranges exceeding 60 nautical miles. The program also continues development of the Advanced Gun System, a 155mm weapon with a range of 100 nautical miles, slated for fielding on DD-21s. In addition, the program anticipates procurement of a 5"/62mm gun capable of employing the ERGM; Aegis cruisers as well as DDG-81 and later Aegis destroyers will carry the 5" gun. Finally, the program supports development of the Land-Attack Standard Missile as a near-term NSFS upgrade for Aegis ships. To meet longer-term NSFS requirements, the Advanced Land-Attack Missile (ALAM) is planned for deployment on DD-21s and is being considered for incorporation on Aegis ships as well.

Information Technology 21st Century (IT21). Under the IT21 program, the Navy is accelerating the fielding of shipborne computer networks supporting warfighting and other requirements. The networks provide secure, unclassified Internet protocol access for naval forces through satellite and other communications means, using commercial hardware and software. As ships implement IT21, battle groups will be better able to coordinate their actions by sharing a common tactical picture. A Navy-Marine Corps Intranet, linking shore-based IT systems within a common network, also is planned.

LAND FORCES

Army. The defense program supports a major transformation of the Army, designed to realize the Army's vision for fielding a more versatile, lethal, and survivable force. The Army will accomplish this transformation by combining digitization initiatives that have been a key part of its modernization program for several years with accelerated development of advanced technologies for propulsion, protection, and direct and indirect fire. Overall, the Army's program will create a more responsive force; accelerate procurement of weapon systems that make light forces more lethal; accelerate procurement of computerized logistics systems to facilitate deployment and sustainment of Army forces; and sustain key elements of the existing force until the transformation is complete.

A major near-term element of the transformation effort has been the establishment of an initial force of two brigades at Fort Lewis, Washington. These units, which are using off-the-shelf loaned equipment, will develop tactics, techniques, and doctrine associated with the operational employment of redesigned forces. In FY 2001, the Army will begin procuring off-the-shelf Interim Armored Vehicles (IAVs) for the interim force. The IAVs will be used first to replace the loaned equipment at Fort Lewis and subsequently to equip other brigades within the Army. Plans call for the interim brigades, called Interim Brigade Combat Teams, to be fielded at a rate of about one per year beginning in the near term. The units participating in this phase will come from both the active and reserve components. Concurrently, the Army will develop, for introduction around FY 2010, a family of related systems providing full-spectrum ground capabilities.

The transformation plan calls for the accelerated procurement of weapons to make lighter forces more lethal. Examples of such systems include the lightweight 155mm howitzer, the Line-of-Sight Antitank (LOSAT) weapon, and the High-Mobility Artillery System (HIMARS). Additionally, the Army will sustain key legacy systems pending completion of the transformation initiative by continuing modernization of the M1 tank, accelerating procurement of the CH-47F cargo helicopter and the UH-60M Blackhawk helicopter, continuing the Heavy Expanded Mobility Tactical Truck Extended Service Program, and procuring the Heavy Equipment Recovery Combat Utility Lift and Evacuation System (Hercules).

To improve strategic responsiveness, procurement of key logistical command and control systems will be accelerated. These systems will facilitate preparation and execution of movement plans, ensure integration with joint logistical systems, and provide a capability to track shipments in transit. Programs to be accelerated include the Global Combat Support System—Army, the Combat Service Support Control System, and the Movement Tracking System.

The Army is proceeding with its plan to equip the first digitized corps (III Corps) by 2004. Digitization entails the incorporation of state-of-the-art computers, software, and digital radios throughout the force structure and in key warfighting platforms, such as the M1 Abrams tank and the M2 Bradley fighting vehicle. Initiatives in this area will enable critical, time-sensitive information to be disseminated rapidly throughout the battlefield, thus permitting overwhelming combat power to be brought to bear rapidly at the right time and location. Anticipating the enhanced capability that digitization will provide, the Army is redesigning its mechanized divisions, reducing their size and making them more deployable while maintaining their combat capabilities.

Marine Corps. Marine Corps modernization programs are driven by the Expeditionary Maneuver Warfare concept. Executing this concept will require adaptive and agile forces able to rapidly reorganize and reorient across a broad range of missions and operational environments. The result will be a force organized, trained, and equipped to conduct expeditionary operations in joint and combined environments across the full spectrum of 21st century operations. The force will be capable of moving directly from positions relatively far offshore through the littoral battlespace to objectives relatively deep ashore. In conjunction with the Navy, Marine forces will continue to provide flexible, early forcible-entry capabilities. Major ongoing Marine Corps equipment replacement and modernization programs include the Advanced Amphibious Assault Vehicle, the Joint Strike Fighter, and the MV-22 Osprey tilt-rotor aircraft.

GROUND COMBAT SYSTEMS

Abrams Tank Upgrade. Three versions of the Abrams tank are currently in service—the original M1 model (dating from the early 1980s) and two newer versions, designated M1A1 and M1A2.

The Army is pursuing two programs—the M1A1D and the M1A2 System Enhancement Program (SEP)—to provide Abrams tanks with digital command and control capabilities. The M1A1D adds an applique computer to existing M1A1 tanks to provide the processor and memory necessary for digital command and control. The M1A2 SEP will upgrade M1 and early M1A2 tanks to the latest M1A2 configuration. SEP enhancements include second-generation forward-looking infrared (FLIR) sensors, improved armor, and computer processor and memory upgrades required by the Army's future command and control software. All tanks in III Corps will be M1A2 SEPs.

Additionally, under the Abrams Integrated Management XXI program, the Army is overhauling its remaining M1A1 tanks to reduce their operating and support costs.

Bradley Fighting Vehicle Upgrade. The A3 upgrade to the Army's Bradley fighting vehicle is a major component of the Army digitization initiative, designed to complement M1A2 SEP capabilities while incorporating additional enhancements needed to meet future requirements. Upgraded Bradleys will be fielded to units with M1A2 SEP tanks, and will be able to share battlefield data with those units. Digitization upgrades will improve both situational awareness and sustainability through automated fault reporting and diagnostics. The A3 upgrade will also increase the Bradley's lethality by adding an improved fire control system and a commander's independent thermal viewer with a second-generation FLIR. Approximately 1,100 earlier-model Bradleys will be remanufactured into A3s. All Bradley infantry fighting vehicles in III Corps will be A3s.

Crusader. This new system consists of a self-propelled howitzer and resupply vehicles. Fully automated, computerized, and designed for use on the digital battlefield, the Crusader offers substantial improvements in lethality, range, and mobility over existing artillery systems. It is slated to replace the M109A6 Paladin self-propelled howitzer and the M992 field artillery ammunition supply vehicle. The Army has restructured the Crusader program in order to reduce the system's weight and increase its deployability. Weight reduction will be attained primarily through changes to the suspension and power plant and through the use of wheeled as well as tracked ammunition supply vehicles. The acquisition objective has been reduced to 480 units, sufficient to equip III Corps.

Advanced Amphibious Assault Vehicle (AAAV). The AAAV remains the Marine Corps' number one ground acquisition priority. It will be used to replace the existing fleet of AAV7A1 amphibious assault vehicles, which are well beyond their originally projected service life. The AAAV will allow Marine forces to launch assaults from points over the horizon, move rapidly to the beach, and continue the attack inland. It also will provide armor-protected transport and direct fire support to Marine infantry forces ashore. The AAAV will have much greater mobility in the water than the AAV7A1, and will have the speed and cross-country mobility to operate with the Marine Corps' M1A1 tanks. A total of 1,013 vehicles are planned for procurement. To bridge the gap until the AAAV's deployment, the Marine Corps is extending the service life of a portion of the AAV7A1 fleet. The service life extension will equip the AAV7A1 with the engine and suspension of the Bradley fighting vehicle and replace many aging components, thereby increasing reliability and maintainability while reducing maintenance and repair costs.

Lightweight 155mm Howitzer. This new towed cannon system is programmed for fielding by both the Army and Marine Corps. Substantially lighter than the M198 howitzer that it will replace, the LW155 will significantly enhance ship-to-shore mobility, while increasing the survivability and responsiveness of artillery support for ground operations. The howitzer will incorporate an Army-developed digital fire control system with a self-locating capability, further enhancing operational effectiveness. The LW155 is currently in engineering and manufacturing development. Plans call for procurement of 686 howitzers.

Future Combat System (FCS). The Army's transformation initiative has as its cornerstone a medium-weight combat vehicle designed to be more strategically mobile than current systems, while remaining highly lethal and effective. To accelerate development of key technologies, the Army has partnered with the Defense Advanced Research Projects Agency to design, develop, and test FCS in tandem with the development and fielding of the redesigned force. In the near term, off-the-shelf IAVs will be procured for the initial and interim force. These vehicles will be in the 20 to 25-ton weight class and will be deployable by C-130 aircraft.

In November 2000, the Army announced its decision to procure the eight-wheeled Light Armored Vehicle 3 (LAV-3). The nine LAV-3 variants planned for production will fill a capability gap in the force by providing strategically responsive combat power as well as increased mobility and agility. For the longer term, the Army will develop a family of FCS vehicles for the transformed force. FCS will be designed to conduct direct combat, deliver line-of-sight or near-line-of-sight munitions, perform reconnaissance, and transport personnel and material.

AIRCRAFT

Comanche Helicopter. The Comanche is a key component of the Army modernization program. Designed for armed reconnaissance and incorporating the latest in stealth, sensors, weapons, and advanced flight capabilities, Comanche helicopters will be electronically integrated with other components of the digitized battlefield. They will provide the operational capabilities essential for a smaller, joint integrated force structure. Enhancements incorporated in the Comanche system will give these helicopters greater mobility, lethality, versatility, and survivability than predecessor systems at lower operating and support costs. The program entered engineering and manufacturing development in FY 2000.

V-22 Osprey. This tilt-rotor aircraft, being developed to replace the Marine Corps' aging fleet of CH-46E and CH-53D helicopters, represents a significant advance in technology for providing tactical mobility to ground combat forces. The V-22's combination of range, speed, and payload is a critical enabler for the modernized force. The Marine Corps plans to procure 360 MV-22 aircraft. Separate acquisition programs include 50 CV-22s modified for Air Force special operations and up to 48 HV-22s for the Navy. The V-22 is expected to achieve initial operational capability and begin full-rate production in FY 2001.

Apache Longbow and Longbow Hellfire Missile. The remanufacture of the Apache system is providing ground commanders with a long-range helicopter capable of delivering massed, rapid fire in day or night and in adverse weather. Longbow's target acquisition system can automatically detect and classify targets. The target acquisition system incorporates a fire control radar that uses millimeter-wave technology to direct the Longbow Hellfire missile. The fire-and-forget capability of the Longbow system provides an enhancement that is critical to the survivability and effectiveness of the launch platform.

UH-1Y/AH-1Z Upgrade. The Marine Corps is making extensive improvements to its aging fleets of UH-1N utility and AH-1W attack helicopters. A total of 280 aircraft—100 UH-1Ns and 180 AH-1Ws—will be remanufactured. The upgraded systems, redesignated UH-1Ys and AH-1Zs, will incorporate significant improvements in operational capability. The remanufacturing program also will reduce life-cycle costs (through reliability and maintainability enhancements), while extending the aircraft's service life. The program is currently in engineering and manufacturing development.

MISSILES AND MUNITIONS

Army Tactical Missile System (ATACMS). The ATACMS is a surface-to-surface guided missile capable of striking targets beyond the range of existing Army cannons and rockets. This advanced weapon and the Multiple-Launch Rocket System are fired by the M270 delivery platform. A total of 1,650 ATACMS Block I missiles were procured through 1997. An improved version, designated ATACMS Block IA, will offer greater range and, with an embedded GPS receiver, greater accuracy as well. A total of 552 of these missiles are planned for production. Block II ATACMS missiles, carrying the Brilliant Antiarmor Submunition (BAT), are slated for fielding in the near term.

Brilliant Antiarmor Submunition. The BAT uses advanced acoustic and infrared sensors to seek, identify, attack, and destroy armored vehicles. ATACMS will deliver a single warhead carrying 13 BAT submunitions deep into enemy territory. The submunitions will autonomously disperse to attack their targets, allowing multiple engagements by a single missile. A preplanned product improvement program will add stationary targets—including multiple-rocket launch systems and Scud missile transporters—to the basic BAT target set through seeker and warhead enhancements. Together, the BAT and ATACMS systems will provide superior deep-strike capability to Army forces.

Javelin. The Javelin is a medium-range, man-portable, fire-and-forget missile with day-and-night capability and an advanced tandem warhead capable of defeating modern main battle tanks, including those with reactive armor. The system includes two major components: a reusable command launch unit (CLU) sight system and the missile. Other enhancements incorporated in the Javelin's design include the ability to fire the missile safely from covered fighting positions and to use the CLU sight separately for battlefield detection and surveillance. The Army plans to procure 21,897 missiles through FY 2005.

Predator Short-Range Assault Weapon. The Predator is a short-range, man-portable, disposable fire-and-forget antitank weapon. It can engage moving targets at ranges from 17 to 200 meters and stationary targets at distances of 17 to 600 meters. The system will enter production in FY 2001. Procurement of a total of 5,700 Predator weapons is planned through FY 2007.

Line-of-Sight Antitank (LOSAT) Weapon. This system consists of kinetic-energy missiles (KEM) and a second-generation FLIR acquisition sensor mounted on a High-Mobility Multipurpose Wheeled Vehicle (HMMWV) chassis. The KEM is designed to defeat all projected future armored vehicles as well as hardened targets, such as bunkers and reinforced urban structures. It will be readily deployable and capable of being air-dropped or slingloaded for helicopter transport.

High-Mobility Artillery Rocket System (HIMARS). The HIMARS is a C-130-transportable version of the Multiple Launch Rocket System (MLRS) launcher, mounted on a 5-ton truck chassis. This highly

deployable, lethal fire support system will provide early-entry forces MLRS firepower capability. HIMARS will be capable of firing all current and future MLRS munitions and ATACMS variants.

SUPPORT SYSTEMS

Digitization. The Army is continuing plans to field advanced information technologies throughout the force. Key initiatives include procurement of platforms (upgraded M1 tanks and Bradley fighting vehicles and other types of vehicles) with built-in digital information-exchange capability, add-on information systems for platforms without built-in digital capability, and interoperable digital command and control systems for all echelons of the Army command structure.

The core of the digitization initiative is the Army Battle Command System and communication network. Critical communication networks include the improved Single-Channel Ground-Air Radio System, the Enhanced Position Location Reporting System, the Warfighter Information Network, the Global Broadcast Service, and the Joint Tactical Radio System (which will be used by all four U.S. Services and is expected to be interoperable with allied equipment).

Modernization initiatives for command, control, communication, computer, intelligence, surveillance, and reconnaissance (C4ISR) systems include nearly 100 programs with an aggregate annual cost of approximately \$3.4 billion. Of that amount, about \$500 million will be spent on hardware and software associated with system integration and experiments.

Digitization is a key component of the Army's transformation initiative. The hardware, software, and doctrinal changes supporting digitization are being evaluated in advanced warfighting experiments. Building on a series of tests conducted in 1996–1998, a Digitization Capstone Exercise is scheduled for 2001. The exercise will be conducted in two phases over the spring and fall. The insights gained from warfighting experiments continue to guide Army digitization efforts.

Family of Medium Tactical Vehicles (FMTV). Under this program, the Army is fielding a complete family of medium tactical trucks and companion trailers. The vehicles share a common cab and chassis as well as common engines and transmissions, fuel systems, suspensions, and steering systems. With their off-road mobility and other performance enhancements, FMTV vehicles offer a significant improvement over the older 2 1/2-ton and 5-ton trucks they replace. Their modern design likewise affords improved crew visibility, safety, and comfort relative to previous truck systems. The FMTV will be produced in six models—cargo, tractor, wrecker, shop van, expandable van, and dump—with companion trailers. The high degree of commonality among the variants will reduce production costs and operations and maintenance expenditures.

Medium Tactical Vehicle Replacement (MTVR). Under the MTVR program, the Marine Corps is replacing its medium tactical truck fleet with new trucks. MTVRs will be used to move troops, equipment, and supplies. Each truck will be capable of carrying more than 7 tons off-road and up to 15 tons on the road. Built for a service life of 22 years, the MTVR fleet will incorporate numerous enhancements, including an electronically-controlled engine/automatic transmission, an independent suspension, a central tire inflation system, antilock brakes, traction control, and improved safety/ergonomic features. Plans call for the production of 6,854 trucks.

Logistics Command and Control Systems. In support of its transformation effort, the Army is accelerating the acquisition of selected logistical command and control systems. The Combat Service Support Control System (CSSC) will provide access to logistical information from echelons above corps to the tactical level. It is one of the systems that constitute the Army's interface with the Global Command and Control System. The CSSC will provide an automated means of supporting logistical, medical, financial, and personnel planning and decision making. The Movement Tracking System will provide visibility into all cargo shipments, enabling two-way communication and the redirection of in-transit material. The Transportation Coordinators Automated Information for Movement System II will facilitate the preparation and execution of movement plans at the unit level. These systems are either being fielded now or will enter the inventory over the next several years.

MOBILITY FORCES

The Department has undertaken an ambitious modernization program for mobility forces. The program is designed to replace obsolete equipment with more capable and efficient systems, while adding capacity in selected areas to meet mobility objectives.

AIRLIFT AND AERIAL REFUELING

C-17. Investments in airlift focus on replacing the aging fleet of C-141 intertheater aircraft with state-of-the-art C-17s. The current multiyear acquisition contract will result in procurement of 120 C-17s by FY 2003, with the last of those aircraft projected for delivery in FY 2005. The Department plans to purchase additional C-17s in subsequent years to ensure that U.S. mobility forces possess the operational flexibility to respond to the full spectrum of crises.

C-5. Current investments in the C-5 force focus on avionics modernization and selected engine modifications. The incorporation of technological advances in cockpit avionics will improve the C-5's operational capability, while enabling the force to meet more restrictive airspace management criteria slated to take effect in future years. For the longer term, the Air Force has initiated a program to improve C-5 reliability, availability, and performance and to reduce operating costs.

KC-135. The KC-135 tanker force also is being modernized. All KC-135 aircraft will receive avionics upgrades, allowing a reduction in cockpit crew size from three to two persons. In addition, 45 KC-135s will be reconfigured to accommodate one of 33 multipoint refueling pod sets, enhancing their ability to refuel Navy, Marine Corps, and allied aircraft.

C-130J. The C-130 force is being modernized through the acquisition of upgraded J-model aircraft for the Air Force and KC-130J tanker aircraft for the Marine Corps. Enhancements incorporated in the C-130J include a redesigned flight station allowing a reduction in the size of the cockpit crew, a modern-technology engine and propeller system, and an integrated digital avionics subsystem.

Large Aircraft Infrared Countermeasures. The military airlift fleet will be provided with a new countermeasure system designed to foil heat-seeking surface-to-air missiles. This program will enhance the survivability of large aircraft operating in high-risk environments.

PREPOSITIONING

The defense program sustains investments in Air Force prepositioning of air base operation sets in Southwest Asia. In addition to reconstituting sets that have been used to support contingency operations, the Air Force is accelerating procurement of additional sets to enhance responsiveness in crises.

INFRASTRUCTURE AND SUPPORT

Numerous airfields, ports, and other transportation facilities support the movement of U.S. military personnel and equipment to destinations worldwide. The Army's Strategic Mobility Program funds improvements to U.S. military installations, ports, and airfields and to the military fleet of railcars. In addition, DoD maintains airfield facilities overseas for refueling, maintenance, and other en route support. Today, DoD operates about one-third the number of overseas airfields that it did a decade ago. Therefore, it is imperative that these facilities be kept in good operating order and, in some cases, be enhanced to increase their capabilities. Complementing these improvements are continued investments in the Global Transportation Network and in materiel-handling equipment. The defense program strengthens command and control capabilities, thus facilitating the tracking of personnel and cargo and enhancing the utilization of transportation resources.

CONCLUSION

U.S. conventional forces continue to evolve to meet 21st century requirements. The defense program sustains a strong emphasis on operational readiness, maintenance and repair of critical facilities, and modernization of key platforms. The Department's modernization programs and associated operational initiatives for conventional forces emphasize and, where possible, accelerate high-payoff programs that will ensure U.S. dominance over any potential military threat.

Table 5-10

Web-Based Resources

For additional information on systems described in the Investment and Force Structure sections, please visit the Web sites for the respective Services at the addresses listed below:

Army Weapon System Handbook	http://www.sarda.army.mil/sard-zs/saal_zs_public_docs/wsh.html
Navy Fact File	http://www.chinfo.navy.mil/navpalib/factfile/ffiletop.html
Air Force Fact Sheets	http://www.af.mil/news/indexpages/fs_index.html
Marine Corps Fact File	http://www.hqmc.usmc.mil/factfile.nsf/

CHAPTER 6

NUCLEAR FORCES AND MISSILE DEFENSES

Nuclear forces and missile defense are critical elements of U.S. national security and will remain so into the future. Strategic forces continue to provide a credible and a highly valuable deterrent. The United States remains committed to appropriate and jointly agreed upon reductions in strategic nuclear forces, but will protect options to maintain its strategic capabilities at START I levels until the START II Treaty has entered into force. The Administration is also committed to developing a capability that could protect the United States, its forces abroad, and its friends and allies from the effects of nuclear, biological, and chemical weapons and the missiles that can deliver them. The United States has a comprehensive strategy for countering such threats, a key component of which is missile defense. The structure of the theater and national missile defense programs meets present and projected future missile threats, provides the best technology to meet these threats, and is fiscally prudent.

STRATEGIC AND THEATER NUCLEAR FORCES

Nuclear forces are an essential element of U.S. security, serving as a hedge against an uncertain future and as a guarantee of U.S. commitments to allies. Accordingly, the United States must maintain survivable strategic nuclear forces of sufficient size and diversity—as well as the deployment of theater nuclear weapons to NATO and the ability to deploy cruise missiles on submarines and aircraft—to deter potentially hostile foreign leaders with access to weapons of mass destruction.

The United States continues to work toward further agreed, stabilizing reductions in strategic nuclear arms, and is confident that once the Treaty on Further Reduction and Limitation of Strategic Offensive Arms (START II) has entered into force, it can maintain the required deterrent at the force levels envisioned in a future treaty (START III), as agreed to in the Helsinki Accords and reinforced at Cologne, Germany, in June 1999, and in Moscow, Russia, in June of 2000.

START TREATIES

The START I Treaty entered into force on December 5, 1994. The United States and the four successor states that assumed the rights and obligations of the former Soviet Union under START—Belarus, Kazakhstan, the Russian Federation, and Ukraine—are working to achieve the final phase of nuclear force reductions by December 2001, as mandated by that treaty. The Treaty on Further Reduction and Limitation of Strategic Offensive Arms (START II), approved by the U.S. Senate in January 1996, has been ratified by Russia but has not yet entered into force because of certain conditions the Russian Duma attached to it. START II calls for reductions in aggregate force levels, conversion or elimination of multiple-warhead intercontinental ballistic missile (ICBM) launchers, elimination of heavy ICBMs, and a limit on deployed submarine-launched ballistic missile (SLBM) warheads. It will eliminate the most destabilizing strategic nuclear systems—multiple warhead ICBMs—and will reduce deployed strategic nuclear warheads by

about two-thirds from Cold War levels. The original START II Treaty called for the final reduction phase to be completed no later than January 1, 2003.

At their March 1997 meeting in Helsinki, President Clinton and Russian President Yeltsin issued a joint statement establishing parameters for future reductions in nuclear forces beyond START II. In this statement, they agreed to an overall limit of 2,000 to 2,500 deployed strategic warheads for a future START III Treaty.

Table 6-1				
Reductions in U.S. Operational Strategic Nuclear Arsenal Force Levels—FY 1990 through FY 2007				
	FY 1990	FY 2000	START I December 5, 2001	START II December 31, 2007
ICBMs	1000	550	550	500
Attributed Warheads on ICBMs	2450	2000	Not over 2000	500
SLBMs	568 ^a	432 ^b	Not over 432	336
Attributed Warheads on SLBMs	4864 ^a	3456 ^b	Not over 3456	Not over 1750
Ballistic Missile Submarines	31 ^a	18 ^b	Not over 18	14
Attributed Warheads on Ballistic Missiles	7314 ^a	5456 ^b	Not over 4900	Not over 2250
Heavy Bombers	324	114 ^c	97 ^c	97 ^c
^a Excludes five decommissioned submarines (and their associated missiles and warheads) that were still START accountable.				
^b Excludes one Benjamin Franklin-class (Poseidon missile) (SSBNs) converted to Special Operations Forces that is still START accountable.				
^c Excludes 93 B-1s that are devoted entirely to conventional missions. B-1s are still accountable as a nuclear bomber under START I, but would not be accountable under START II.				

They also agreed to extend the deadline for elimination of strategic nuclear delivery vehicles under START II to December 31, 2007, but stipulated that systems to be eliminated under START II must be deactivated by December 31, 2003.

These agreements were formalized in a Joint Agreed Statement and a Protocol to the treaty in New York in September 1997, extending the time period for full implementation of START II until December 31, 2007. In addition, letters were signed and exchanged legally codifying the Helsinki Summit commitment to deactivate, by December 31, 2003, the U.S. and Russian strategic nuclear delivery vehicles that under START II will be eliminated. Although Russia has now ratified the START II Treaty, because of Russian conditions, the U.S. Senate must now give its advice and consent to ratify the Protocol to the START II Treaty and its associated Joint Agreed Statement before the Treaty can enter into force.

Since establishment of the Cooperative Threat Reduction (CTR) program in 1991, the United States has been assisting Russia, Ukraine, Belarus, and Kazakhstan in implementing strategic force reductions required under the START I Treaty. In anticipation of further reductions mandated by the START II Treaty and in potential support of a negotiated START III Treaty, the United States is planning additional CTR projects with Russia.

FORCE STRUCTURE AND CAPABILITIES

Until START II enters into force, the United States is protecting options to maintain a strategic nuclear arsenal at essentially START I levels. If START II is implemented as amended by the Helsinki Summit letters, accountable warheads will be reduced by the end of 2007 to a level of 3,000 to 3,500, of which no more than 1,750 may be carried on SLBMs. Strategic nuclear delivery vehicles that will be eliminated under START II will be deactivated by December 31, 2003, providing the benefits of a reduced force structure four years prior to the agreed 2007 date for full elimination.

LAND-BASED INTERCONTINENTAL BALLISTIC MISSILES

At the end of FY 2000, the United States had 500 Minuteman III ICBMs and 50 Peacekeeper missiles. If START II enters into force, the United States will modify all Minuteman III missiles to carry only one warhead and will retire all Peacekeeper missiles. In this transition, DoD will redeploy the Mark 21 reentry vehicle (RV), currently deployed on Peacekeeper, on a portion of the single RV Minuteman force. Mark 21 RVs contain features that further enhance nuclear detonation safety and reduce the risk of plutonium dispersal in the unlikely event of a fire or other mishap.

The United States is not developing or producing any new ICBMs. This makes it difficult to sustain the industrial base needed to maintain and modify strategic ballistic missiles. To maintain the Minuteman ICBM system and to preserve key industrial technologies needed to sustain ICBMs and SLBMs, the Department plans to replace guidance and propulsion systems, as well as to preserve a core of expertise in the areas of reentry vehicle and guidance system technology. Further, the Air Force is exploring plans for a replacement to the Minuteman III around 2020.

SEA-BASED BALLISTIC MISSILES

The Ballistic-Missile Submarine (SSBN) fleet has reached its planned total of 18 Ohio-class submarines. The first eight Ohio-class submarines each carry 24 Trident I (C-4) missiles; the final ten are each equipped with 24 Trident II (D-5) missiles. The SSBN fleet's survivability and effectiveness are enhanced through the D-5 missile's improved range, payload, and accuracy. The Future Year Defense Plan (FYDP) provides for continued procurement of D-5 missiles to support the conversion of four SSBNs from the C-4 to the D-5 missile system. Backfits during regularly scheduled ship depot maintenance periods began in 2000. The United States will retain 14 SSBNs armed with D-5s, while the four oldest Ohio-class SSBNs will be eliminated or converted. D-5 missiles aboard the 14 boats, capable of carrying eight warheads a piece, will be downloaded consistent with START II limits. The FYDP also supports Navy planning for a life extension to the D-5 SLBM to match missile life to the recently extended Trident submarine service life of 44 years.

HEAVY BOMBERS

The U.S. bomber force consists of 93 B-1s, 94 B-52s (includes 18 attrition/reserve aircraft), and 21 B-2s. Operational B-2s, all deployed from Whiteman AFB, Missouri, are Block 30 configuration aircraft. B-2 and B-52 bombers can be used for either nuclear or conventional missions. The B-1 force is dedicated to, and has been equipped exclusively for, conventional operations.

READINESS

Selected elements of U.S. strategic forces maintain the highest state of readiness to perform their strategic deterrence mission. And while these forces can respond promptly to aggression if necessary, they can only be used with proper authorization from the National Command Authorities. A credible and effective nuclear deterrent requires proper support for all of its components: attack platforms, other weapons systems, command and control elements, the nuclear weapons stockpile, research and development capabilities, the supporting industrial base, and well trained, highly motivated people.

U.S. ICBMs and SLBMs on day-to-day alert are not targeted against any specific country. The missiles, however, can be assigned targets on short notice. The United States maintains two full crews for each SSBN, with about two-thirds of operational SSBNs routinely at sea. At least one and often two U.S. SSBNs are undergoing long-term overhauls at any given time and are not available for immediate use. All 550 ICBMs, with the exception of a few undergoing routine maintenance, are maintained on a continuous day-to-day alert. The bomber force is no longer maintained on day-to-day alert, although it can be returned to alert status within a few days if necessary. No nuclear weapons can be executed except by direction of the President. This has been a longstanding U.S. policy and remains so.

NUCLEAR MISSION MANAGEMENT

The Department relies upon the Nuclear Mission Management Plan (NMMP) to provide an integrated approach for the support of the nuclear mission. The NMMP provides the policy backdrop for the maintenance of the nation's nuclear forces, describes their integrated architecture as it exists today, and summarizes the efforts of the Services and defense agencies to sustain and modernize a credible deterrent. A concise, comprehensive reference on DoD programs supporting the nuclear deterrent, the NMMP is a valuable tool for decision making in the Department.

STOCKPILE STEWARDSHIP

The President declared that maintenance of a safe and reliable nuclear weapon stockpile is a supreme national interest of the United States. The Department of Energy's Stockpile Stewardship Program (SSP) is the United States' primary means of ensuring the safety and reliability of its nuclear deterrent, absent nuclear testing. The SSP develops new tools to supplant nuclear explosive testing as the means to sustain the confidence obtained in the past from nuclear explosive testing. There was high confidence in the enduring stockpile when the United States entered into a nuclear testing moratorium in 1992. Since that time, the SSP, principally its surveillance program, has uncovered problems including those associated with aging. Through the SSP, an understanding of those problems has been developed, coupled with programs to address them. The SSP still faces challenges; but as long as it continues to get the resources it needs, it will keep pace with the complex problems likely to be encountered in the future to resolve a safety or reliability issue relating to a warhead critical to the U.S. deterrent. Should annual certification reveal a

problem that can only be resolved by nuclear explosive testing, the Secretaries of Defense and Energy will inform the President and Congress of the need to resume nuclear testing.

FUNDING AND MODERNIZATION

Funding for strategic nuclear forces—ICBMs, SLBMs, and nuclear bombers—has significantly declined in recent years, as has the fraction of the total defense budget that is devoted to nuclear forces. A few modernization programs for strategic forces are currently under way: B-2 modifications, primarily for conventional missions; D-5 SLBM life extension activities and procurement; conversion of four SSBNs from the C-4 to the D-5 missile systems; and Minuteman III life extension activities. With most nuclear modernization efforts complete, programs to sustain nuclear forces and their readiness now account for most strategic nuclear funding.

THEATER NUCLEAR FORCES

As reaffirmed by NATO in its April 1999 Strategic Concept, theater nuclear forces, in the form of dual-capable aircraft, in the United States and NATO are an essential political and military link between the European and North American members of the Alliance. They also contribute to the spectrum of response options to deter aggression. The United States will continue to maintain these weapons in NATO, but at levels significantly below Cold War levels. All naval theater nuclear weapons are in storage. Nuclear weapons capability on surface ships has been eliminated, but the capability to deploy Tomahawk Land Attack Missiles armed with a nuclear weapon on submarines has been maintained.

COMPREHENSIVE TEST BAN TREATY

On October 13, 1999, the United States Senate rejected the Comprehensive Test Ban Treaty (CTBT). Nevertheless, the President stated that the United States would not abandon it. Rather, he stated he fully intends that the United States will eventually ratify the treaty. Accordingly, the administration will work with the Senate to ensure that the merits of the CTBT are well understood and to address Senators' legitimate concerns. Former Chairman of the Joint Chiefs of Staff, General John Shalikashvili, was appointed special advisor to the President and Secretary of State on CTBT to address Senate concerns about the CTBT and help build bipartisan support for eventual advice and consent to ratification of the Treaty.

The President also reaffirmed U.S. policy of maintaining a moratorium on nuclear explosions, a policy that has been in place since 1992. The other nuclear weapon states also have policies of not conducting any nuclear explosions, pending CTBT entry into force. The United States will continue to urge the nuclear weapon states to maintain the moratorium on nuclear testing that they have declared and all other states to show similar restraint.

The purpose of the CTBT is to ban all nuclear explosions and thus help constrain nuclear proliferation. The CTBT cannot prevent proliferation. However, the prohibition of all nuclear explosions will help make it more difficult for states possessing nuclear weapons to improve existing types or to develop advanced new types of nuclear weapons.

The CTBT would prohibit only nuclear explosions. It would not prohibit stockpile stewardship activities the United States needs to carry out to maintain its nuclear deterrent. Such activities include non-nuclear

testing, subcritical experiments, preparations to resume full-scale nuclear testing, computer modeling and simulation of nuclear explosions, and any other stockpile maintenance activities not involving a nuclear explosion. Similarly, the treaty would not prohibit design, development, production and remanufacture of nuclear weapons.

MISSILE DEFENSES

The proliferation of nuclear, biological, and chemical (NBC) weapons, in addition to conventional warheads, and the missiles that can deliver them pose a major threat to the security of the United States, its allies, and friendly nations. Over 20 countries possess or are developing NBC weapons, and more than 20 nations have theater ballistic missiles (TBMs) or cruise missiles to deliver them. Some of these countries are pursuing capabilities for much longer-range ballistic missiles. The U.S. missile defense program reflects the urgency of this immediate threat through both its Theater Air and Missile Defense (TAMD) programs and its National Missile Defense (NMD) program. The objective of these programs is to develop as quickly as possible a highly effective defense system against ballistic missiles from states of concern. Finally, the Department is continuing development of technology to integrate and improve ballistic and cruise missile defense systems.

ROLE OF MISSILE DEFENSE IN U.S. DEFENSE STRATEGY

The U.S. defense strategy for the 21st century seeks to shape the international security environment in ways favorable to U.S. interests, respond to the full spectrum of threats, and prepare for an uncertain future. Missile defense is a key component of this strategy. Missile defenses may contribute to the reduction and prevention of missile proliferation and strengthen regional stability by undermining the utility of ballistic missiles to potential aggressors, both critical for shaping the international security environment. Theater missile defenses (TMD) are key to protection of deployed forces as they act in defense of U.S. national security interests. Additionally, the U.S. ability to provide missile defense protection to allies, in conjunction with the extended deterrent from the U.S. nuclear umbrella, may contribute to mitigating the desire of many states to acquire NBC weapons and ballistic missiles.

At the same time, missile defenses are essential for responding to growing ballistic and cruise missile threats. The threat of missile use in regional conflicts has grown substantially. The potential combination of NBC weapons with theater-range missiles poses very serious challenges to U.S.-led coalition defense efforts. Hostile states possessing theater missiles armed with NBC weapons may threaten or use these weapons in an attempt to deter or otherwise constrain U.S. power projection capability. Such threats could intimidate allies or friends and discourage them from seeking U.S. protection or participating in coalitions with the United States. Even small-scale theater missile threats, coupled with NBC weapons, dramatically raise the potential costs and risks of military operations. Effective theater missile defenses will ensure that the United States is prepared to confront regional instability or conflict successfully in such an environment.

NATIONAL MISSILE DEFENSE PROGRAM

The NMD program has anticipated for some time the possibility that states of concern could come to possess intercontinental ballistic missiles that could threaten the United States. This possibility was underscored by the August 1998 North Korean attempt to launch a satellite on a Taepo Dong-1 (TD-1)

missile. The launch demonstrated some important aspects of ICBM development, most notably multiple-stage separation. While the Intelligence Community expected a TD-1 launch for some time, it did not anticipate that the missile would have a third stage or that it would be used to attempt to place a satellite in orbit. A three-stage variant of the TD-1, if successfully developed and deployed, could pose a threat to portions of the United States as well as to the territory of U.S. allies.

The Intelligence Community's current view, however, is that North Korea is more likely to develop the Taepo Dong-2 (TD-2) missile as a weapon. The TD-2 is a derivative of TD-1 technology, and a two-stage TD-2 could have the range to reach Alaska, while a three-stage variant could bring most of the lower 48 states within range of North Korean ballistic missiles. The Intelligence Community believes North Korea could launch a TD-2 at any time, unless it is further delayed for political reasons. Other states of concern, particularly Iran, could test an ICBM in the latter half of this decade, using foreign assistance. These nations may also pursue a TD-type ICBM, possibly with North Korean assistance or purchase such a North Korean system outright, in the next few years.

In the past several years, the Department of Defense has made significant progress on the NMD program, including the completion of environmental impact statements for possible interceptor sites in Alaska and Grand Forks, North Dakota. The Department also conducted three intercept tests (in October 1999 and January and July 2000). In September 2000, the President determined that there was not sufficient information about the technical and operational effectiveness of the entire NMD system to move forward with deployment at that time, although the program is sufficiently promising and affordable to justify continued development and testing. In making this decision, the President considered four factors: whether the expected threat is materializing; the status of the technology based on an initial series of rigorous flight tests; affordability; and the implications that going forward with the limited NMD deployment would hold for the overall strategic environment and U.S. arms control objectives, including efforts to achieve further reductions in strategic nuclear arms under START II and START III.

The FYDP continues to demonstrate the Administration's commitment to an NMD system, and includes a significant level of funding for deploying and NMD system. The deployment, if approved by the next President, would proceed in phases. As an immediate goal to meet early threats, an initial NMD system would be optimized for the most immediate threat—that from North Korea. It would be capable of defending all 50 states against a launch of a few tens of warheads accompanied by simple penetration aids. It would also be capable of defending the U.S. from a handful of warheads from other states of concern. For planning purposes, this first-phase NMD architecture would include 100 Ground-Based Interceptors (GBIs) deployed in Alaska; an X-Band Radar (XBR) deployed at Shemya, Alaska; upgrades to five existing ballistic missile early warning radars; and a combination of the Defense Support Program (DSP) and the Space-Based Infrared Satellite-High (SBIRS-H) satellite systems.

The NMD development program will continue to be conducted in compliance with the Anti-Ballistic Missile Treaty. NMD deployment would require modifications of the treaty, and the U.S. is engaging the Russians on the changes to the ABM Treaty that would permit deployment of a limited NMD system.

THEATER AIR AND MISSILE DEFENSE PROGRAMS

In light of the widespread deployment of theater ballistic missiles today, the Department's immediate missile defense priority is to develop, procure, and deploy TAMM systems to protect key facilities and

forward-deployed elements of the U.S. armed forces, as well as allies and friends. This plan envisions time-phased acquisition of a multi-tier, interoperable ballistic missile defense system that provides defense in depth against theater ballistic and cruise missiles. The Ballistic Missile Defense Organization and the Joint Theater Air and Missile Defense Organization are working together to institute an improved capability to defend against air and missile threats. The increased emphasis on interoperable air and missile defenses has led to a family of systems concept. A key aspect of the family of systems approach is to leverage the synergy among air, ballistic, and cruise missile defenses, and to integrate otherwise separate systems in a comprehensive effort to defeat the threat. This concept calls for a flexible combination of integrated, interoperable TAMD systems capable of joint theater operations. It includes several individual weapon systems, various sensors, and advanced battle management/command, control, communications, computers, and intelligence capabilities.

Lower-tier systems remain the top priority to defeat short-range ballistic missiles. The Patriot Advanced Capability-3 (PAC-3) and the Navy Area Defense systems are the key lower-tier systems for the TAMD mission. PAC-3 will provide air defense of ground combat forces and defense of high-value assets against high-performance, air-breathing, and theater ballistic missiles. The program has completed six successful intercepts, and was awarded a decision in October 1999 to proceed into low-rate initial production.

The Navy Area Theater Ballistic Missile Defense program, using a reconfigured SPY-1 phased-array radar and an upgraded version of the Standard Missile (Block IV-A) on Aegis-equipped ships, will provide U.S. forces, allied forces, and areas of vital national interest at sea and in coastal regions with an active defense against theater ballistic and cruise missiles. Since the second quarter of FY 1999, an interim Navy Area TBMD tracking software capability, Linebacker, has been deployed on two ships and is operational.

The Department has worked with its international partners, Germany and Italy, to restructure the program for the Medium Extended Air Defense System (MEADS), a follow-on lower-tier TMD system. The Department selected an international contractor in 1999 to proceed with the new approach. The new effort will focus on developing a fire control radar and mobile launcher, the key elements needed to fulfill requirements for a highly mobile, rapidly deployable TMD system capable of providing 360-degree coverage for troop defense. The restructured program will allow the Department to take advantage of attractive, less costly program options that build on the capabilities of elements from existing TMD weapons systems, such as PAC-3. The Department is committed to the development of MEADS and has budgeted \$1.3 billion in the FYDP.

Upper-tier systems—the Theater High Altitude Area Defense (THAAD) system and the Navy Theater Wide (NTW) program—are designed to intercept incoming missiles at high altitudes in order to defend larger areas, to defeat medium- and intermediate-range ballistic missiles, and to increase theater commanders' effectiveness against weapons of mass destruction. THAAD will make possible more effective protection of broad areas, dispersed assets, and population centers against TBM attacks. With the recent two successful intercept tests, the Department has determined that the THAAD program has met the exit criteria necessary for entering the engineering and manufacturing development (EMD) phase of acquisition. Based on this decision, an FUE of FY 2007 is anticipated for THAAD. The NTW Theater Ballistic Missile Defense (TBMD) system builds upon the existing AEGIS Combat System and the Navy Area Defense TBMD system. NTW takes advantage of available sea room and ship mobility to achieve intercepts on the target TBM in the ascent, mid-course, and terminal stages of exo-atmospheric flight. The

present focus of the NTW program is the AEGIS Leap Intercept (ALI) demonstration project. The ALI project is a series of exo-atmospheric flight tests culminating in the intercept of a TBM target in the last half of 2001. The test series began in FY 1999 and should be completed in FY 2002. ALI will test the four stages of the Standard Missile III (SM-3) missile flight.

As an additional layer of missile defense, the Airborne Laser (ABL) will destroy theater-range ballistic missiles during their boost phase of flight. By terminating powered flight early, ABL causes a missile's warhead to fall short of its intended target. ABL development is paced to accomplish a lethality demonstration against an in-flight ballistic missile in FY 2003.

All TMD programs that are sufficiently mature to permit an ABM Treaty compliance determination have been determined to be compliant, as currently planned, with U.S. ABM Treaty obligations.

Cruise missile defenses (CMD) are either evolving from existing systems or are being developed from scratch. The Cooperative Engagement Capability is being used to net together air defense radar systems while investigations of selected BMD weapons' elements, such as missile defense sensors; battle management/command, control, and communications; and weapons, are underway to adapt and apply them to CMD. The investigations include elements from PAC-3 and Navy Area Defense lower-tier systems. The CMD development strategy is to identify and leverage the synergy possibilities among ballistic missile, cruise missile, and air defense, and to employ them to build-up CMD via an integration of weapons systems into a comprehensive network that can defeat the cruise missile threat. In addition, CMD-focused advanced technology programs are investigating ways to add depth to existing capability, such as shooting down land attack cruise missiles at extended ranges, possibly even over an adversary's territory. To position the Department to capitalize on all CMD developments, a collaborative process is underway to devise concepts for joint employment and a TAMD investment plan, including CMD. The combatant commanders, the Services, the Ballistic Missile Defense Organization (BMDO), and the Joint Theater Air and Missile Defense Organization are participating in this collaborative process.

COOPERATION WITH ALLIES, FRIENDS, AND STRATEGIC PARTNERS

As part of broader efforts to enhance the security of U.S., allied, and coalition forces against ballistic missile strikes and to complement U.S. counterproliferation strategy, the United States is exploring opportunities for theater ballistic missile defense cooperation with its allies and friends. The objectives of U.S. cooperative efforts are:

- To provide effective missile defense for U.S., allied, and friendly troops, and for allied and friendly civilian populations.
- To strengthen U.S. security relationships.
- To enhance collective deterrence of missile attacks.
- To share the burden of developing and fielding theater missile defenses.
- To enhance interoperability between U.S. forces and those of allies and friends.

The United States is taking an evolutionary and tailored approach to allied cooperation that accommodates varying national programs and plans, as well as special national capabilities. This approach includes bilateral and multilateral research and development, off-the-shelf purchases, and coproduction of TMD components or entire systems. Furthermore, as part of an ongoing initiative aimed at countering the TBM threat, the United States is sharing early warning data on launches of theater-range ballistic missiles with allies and friends as a means of engendering greater cooperation on theater missile defense.

In its 1999 New Strategic Concept, NATO reaffirmed the risk posed by the proliferation of WMD and ballistic missiles. The Alliance reached general agreement on the framework for addressing these threats. As part of NATO's Defense Capabilities Initiative, Allies agreed at the April 1999 Washington Summit to develop Alliance forces that can respond with passive and active measures to protect forces and infrastructure from WMD attack. At the Summit the allies agreed that layered ballistic missile defense is necessary for NATO's deployed forces. A notable achievement in this area was the creation in December 1999 of a trilateral U.S.-Dutch-German Extended Air Defense Task Force. This task force, building on the enormous success of the Dutch-led Optic Windmill series of TMD exercises, will ensure interoperability of the three nations' Patriot forces and pioneer operational concepts for multinational missile defense operations. For the past several years, DoD has also held discussions with Japan regarding cooperative research in support of developing a TMD capability. Japan has decided to participate in such cooperative research, which is aimed at providing enhanced capabilities for the Navy Theater Wide program.

U.S. TMD cooperation with Russia is an excellent example of how cooperative approaches to dealing with new regional security challenges of mutual interest, such as the proliferation of ballistic missiles, can advance U.S. security objectives. The United States and Russia have conducted two TMD exercises and agreed to a third, multiple-phase effort. These exercises have provided a practical basis for U.S. and Russian forces to develop agreed procedures to conduct theater missile defense operations during regional contingencies where they could be deployed together, facing a common adversary that resorts to employment of theater ballistic missiles.

Building upon the September 1998 Joint Summit Statement and the successful U.S.-Russian operation of a temporary Joint Missile Warning Center during the millennium rollover, Presidents Clinton and Putin signed an agreement in June 2000 to establish a jointly-manned center in Russia for the timely sharing of information on the launches of ballistic missiles and space launch vehicles detected by each sides' early warning systems. The United States and Russia have also negotiated the establishment of a prelaunch notification of planned missile launches. These initiatives are designed to minimize the risks associated with dangerous reactions to false warning of a missile attack.

In addition, BMDO is engaged in a variety of basic and applied research programs as well as technology cooperation projects such as the Russian Observation Satellites (RAMOS) program. The RAMOS program is a space-based remote sensor research program initiated in 1992. The program will design, build, launch, and operate two satellites that will provide observations of the earth's atmosphere and ballistic missile launches in the short and mid-to-long wavelength infrared bands. The U.S. contribution to RAMOS is planned to be \$344 million.

U.S.-Israeli cooperative programs, including shared early warning on theater missile launches, the development of the Arrow TMD system and Tactical High Energy Laser air and missile defense system,

assist Tel Aviv in developing a ballistic missile defense capability to deter and, if necessary, defend against current and emerging ballistic missile threats in the region. Planned interoperability with U.S. theater missile defense systems will afford Israel a more robust defense. Moreover, the program provides technical benefits for both sides by expanding the theater missile defense technology base and providing risk mitigation for U.S. weapon systems.

ADVANCED TECHNOLOGY DEVELOPMENT

Activities in the missile defense technology base are key to countering future, more difficult threats. The technology base program underpins the theater ballistic missile defense, cruise missile defense, and National Missile Defense programs. Advanced Technology Development provides real benefits to the Department's capabilities by reducing development risk in existing and new weapon system and accelerating the introduction of new technologies via upgrades to baseline programs. Moreover, Advanced Technology Development programs provide innovative technologies that counter, or even forestall, an adversary's emerging technologies, and importantly, reduce the cost of future weapons systems. Advanced technologies are also being exploited to reduce the cost of future missile defense systems, as well as advancing U.S. capabilities in Attack Operations, reducing the pressure placed on theater air and missile defense systems.

CONCLUSION

Strategic forces remain a critical element of the U.S. policy of deterrence. Although U.S. nuclear forces have been reduced substantially in size and the percentage of the defense budget devoted to them has been greatly reduced as well, strategic forces continue to provide a credible and a highly valuable deterrent. The United States remains committed to appropriate and jointly agreed upon reductions in strategic nuclear forces, but will protect options to maintain its strategic capabilities at START I levels until the START II Treaty has entered into force. The Administration is also committed to developing a capability that could protect the United States, its forces abroad, and its friends and allies from the effects of nuclear, biological, and chemical weapons and the missiles that can deliver them. The United States has a comprehensive strategy for countering such threats. The structure of the theater and national missile defense programs meets present and projected future missile threats, provides the best technology to meet these threats, and is fiscally prudent.

CHAPTER 7

MANAGING THE CONSEQUENCES OF DOMESTIC WEAPONS OF MASS DESTRUCTION INCIDENTS

Consequence management is predominantly an emergency management function and includes measures to protect public health and safety, restore essential government services, and provide emergency relief to local governments, businesses, and individuals affected by the consequences of a chemical, biological, radiological or nuclear agents or high-yield explosives (CBRNE) incident. In an actual or potential incident, a consequence management response will be managed by a Lead Federal Agency (LFA) such as the Federal Emergency Management Agency (FEMA) using structures and resources described in the Federal Response Plan. (See Chapter 2 for information about preventive efforts.)

In the event of a domestic incident on American soil resulting in the release of CBRNE, the local law enforcement, fire and emergency medical personnel who are first to respond may become rapidly overwhelmed by the magnitude and lingering effects. In that instance, a governor may request a Presidential disaster declaration for the state and assistance from the federal government through the LFA. If DoD assistance is requested, the Department of Defense has many unique capabilities, both technical and operational, which could support civil authorities to mitigate and manage the consequences of such an incident.

DOD'S ROLE IN MANAGING THE CONSEQUENCES OF DOMESTIC CBRNE INCIDENTS

DOMESTIC TERRORIST THREAT

The terrorist threat of today is far more complex than that of the past. Violent, religiously and ethnically motivated terrorist organizations now share the stage with the more traditional, politically motivated movements. State sponsors, including Iran, Iraq, Libya, Syria, Sudan, North Korea, and Cuba, continue to provide vital support to a disparate mix of terrorist groups. As recent history shows, homegrown organizations and disaffected individuals have also demonstrated an increasing willingness to act on U.S. soil. Not only is the threat more diverse, but the increasing sophistication of organizations and their weaponry also make them far more dangerous. The Oklahoma City and World Trade Center bombings have already demonstrated the devastating effects of conventional explosives in the hands of terrorists.

ORGANIZATION

Due to the increasing volatility of the threat and time sensitivities associated with providing effective support to the LFA charged with CBRNE consequence management, the Secretary of Defense appointed an Assistant to the Secretary of Defense for Civil Support (ATSD(CS)) to serve as the principal staff assistant and civilian advisor to the Secretary and Deputy Secretary of Defense on these matters. The

ATSD(CS) provides for the oversight of policy, requirements, priorities, resources, and programs related to the DoD role in managing the consequences of a domestic incident involving the naturally occurring, accidental or deliberate release of CBRNE.

To manage the Department's efforts, the ATSD(CS) chairs the DoD Weapons of Mass Destruction (WMD) Preparedness Group (WMD in this context refers to CBRNE), a coordinating body composed of the Assistant Secretaries for Health Affairs; Reserve Affairs; Special Operations/Low Intensity Conflict; Command, Control, Communications, and Intelligence; and Legislative Affairs; the General Counsel; the Deputy Under Secretaries for Comptroller, Policy Support and Acquisition, Technology, and Logistics; and senior representatives from the Joint Staff, the Department of the Army, and the Defense Threat Reduction Agency. The DoD WMD Preparedness Group ensures that DoD efficiently marshals its consequence management resources and its many capabilities in support of the LFA in accordance with the Federal Response Plan. The ATSD(CS) also represents DoD in the interagency consequence management policymaking body led by the President's National Coordinator for Security, Infrastructure Protection, and Counterterrorism.

DoD assets are tailored primarily for the larger warfighting mission overseas. But in recognition of the unique nature and challenges of responding to a domestic CBRNE event, the Department established the Joint Task Force for Civil Support (JTF-CS), a standing headquarters element subordinate to United States Joint Forces Command (JFCOM), to plan for and integrate DoD's support to the LFA for domestic CBRNE consequence management. On a day-to-day basis, JTF-CS is involved in CBRNE consequence management doctrine development, training and exercise management, plans development and review, and requirements identification. The United States Pacific Command and the United States Southern Command have parallel responsibilities for providing military assistance to civil authorities for states, territories, and possessions outside the continental U.S. and JFCOM may be a principal force provider. JFCOM, in turn, provides technical advice and assistance to geographic commanders in chief conducting consequence management operations in response to CBRNE incidents outside the continental U.S.

DOD PRINCIPLES FOR CONSEQUENCE MANAGEMENT

In accordance with Presidential Decision Directives 39 and 62, and the Defense Against Weapons of Mass Destruction Act of 1996, the federal government has taken comprehensive steps to enhance and support state and local authorities in responding to CBRNE incidents and to minimize their consequences. When requested, the Department of Defense will provide its unique and extensive resources in accordance with several key principles.

First, DoD will ensure an unequivocal chain of responsibility, authority, and accountability for its actions to assure the American people that the military will follow all relevant laws when an emergency occurs. To this end, the Assistant to the Secretary of Defense for Civil Support will provide full-time civilian oversight for the domestic use of DoD's CBRNE consequence management assets in support of other federal agencies.

Second, during a CBRNE event, DoD will always play a supporting role to the LFA in accordance with the Federal Response Plan and will ensure complete compliance with the Constitution, the Posse Comitatus Act, and other applicable laws. The Department routinely provides support and assistance to civilian

authorities and has considerable experience balancing the requirement to protect civil liberties on one hand with the need to ensure national security on the other.

Third, DoD's consequence management equipment and assets are largely resident in its warfighting capabilities to protect U.S. forces during hostilities overseas. However, many of these capabilities can be dual-use. Military units specializing in decontamination, medical support, logistics, transportation, and communication, for example, could assist in the domestic arena as well. DoD can also contribute in areas where it has considerable skills and experience—for example, rapid mobilization and mass logistics—in support of the appropriate LFA.

Fourth, whereas active duty forces are the United States' forward-deployed assets overseas, DoD will employ the Reserve Component and National Guard as the forward-deployed units for consequence management in the domestic arena. In the event of a domestic CBRNE event, certain units would be able to respond rapidly due to their geographic dispersion and proximity to major American cities. Moreover, many of the applicable capabilities such as decontamination, medical support, transportation, and communications are already contained in reserve and National Guard units.

Fifth, DoD will balance LFA requests for support against any ongoing warfighting requirements. Before providing support, DoD will consider whether requested military assets are available domestically and whether the Department has sufficient legal and budgetary authorities to provide them.

DOD CAPABILITIES FOR CONSEQUENCE MANAGEMENT

DoD maintains other assets that could be employed under JTF-CS command and control for domestic consequence management. These include but are not limited to the Marine Corps Chemical Biological Incident Response Force, the Army Technical Escort Unit, the Army Radiological Advisory Medical Team, the Air Force Radiation Assessment Team, the Defense Nuclear Advisory Team, the Army Special Medical Augmentation Response Teams, the Chemical-Biological Rapid Response Team, the Army Medical Research Institute of Infectious Diseases, the Navy Medical Research Center, the Armed Forces Radiobiology Research Institute, the Army Medical Research Institute for Chemical Defense, and the Defense Threat Reduction Agency. Additionally, DoD could contribute mobile field hospitals, logistics, communications, mortuary affairs, military police, search and rescue teams, and chaplains, if such capabilities are requested.

DoD has also established 27 WMD Civil Support Teams (CSTs), each composed of 22 well-trained and equipped full-time National Guard personnel. Upon completion of training and certification in FY 2001, one WMD CST will be stationed in each of the ten FEMA regions around the country, ready to provide support when directed by their respective governors. Their mission will be to deploy rapidly, assist local first responders in determining the precise nature of an incident, provide expert medical and technical advice, and help pave the way for the identification and arrival of follow-on military support. Unless federalized, the CSTs will remain state National Guard assets that can be quickly accessed by proximate governors. By congressional direction, DoD is also training 17 additional WMD CSTs whose certification is anticipated in FY 2002. Congress authorized an additional five teams to be established in FY 2001. Their training and certification is also anticipated after the 17 additional CSTs are certified. (See Chapter 9, Total Force Integration, for more information.)

OTHER PREPARATORY ACTIVITIES

TOP OFFICIALS EXERCISE

DoD recently participated in an interagency exercise called Top Officials (TOPOFF) which involved key local, state, and federal officials. Mandated by Congress, the exercise tested national response to chemical, biological and radiological attacks in three American cities. TOPOFF demonstrated that the Department of Defense is prepared to provide both crisis and consequence management support to civil authorities for incidents involving multiple, geographically dispersed CBRNE events. The exercise demonstrated interagency and Department of Defense strengths as well as areas which need improvement. The Department of Defense is committed to working with federal, state and local authorities through the FBI and FEMA to enhance the Department's strengths and to improve U.S. weaknesses.

DOMESTIC PREPAREDNESS PROGRAM

The Defense Against Weapons of Mass Destruction Act of 1996 (also known as the Nunn-Lugar-Domenici Act) required DoD to enhance the capability of federal, state, and local (FSL) emergency responders regarding terrorist incidents involving CBRNE. The Domestic Preparedness Program (DPP) consists of four elements: the City Train-the-Trainer Program, the Exercise Program, the Expert Assistance Program, and the Chemical Biological Rapid Response Team.

Since 1996, DoD has trained over 28,000 first responder trainers in over 105 cities through the city training program, which also included training equipment loans to 68 cities. The Exercise Program element, in addition to conducting exercises during the city training program, has consisted of an annual FSL exercise and execution of the Improved Response Programs. The annual FSL exercise works to improve interaction among federal agencies and departments and further exercises that interaction among FSL agencies in response to a threat and/or actual CBRNE incident. The biological FSL exercise scheduled for New York City in September 1999 was actually postponed due to the outbreak of the West Nile virus, which strained exercise participants. The exercise is being rescheduled for a time in 2001.

The Improved Response Programs effort is a set of individual technical investigations and exercises geared toward gathering information to improve procedures and tactics for responding to CBRNE incidents. It is focused on enhancing responses to chemical or biological incidents and systematically addresses the response at the federal, state, and local levels. The Expert Assistance Program is composed of the following elements: helpline, hotline, web page, chemical/biological database, and equipment testing program.

The final element, the Chemical Biological Rapid Response Team, leverages the capabilities of all the military Services in providing a unique multidisciplinary chemical/biological response capability. Consistent with Presidential direction, DoD transferred major portions of the DPP to the Department of Justice on October 1, 2000. DoD will retain the Exercise Program until its mandated completion at the end of FY 2001, and will indefinitely retain the Chemical Biological Rapid Response Team, which is a fielded military unit.

CONCLUSION

Consequence management brings together the skills and assets of many government agencies at the federal, state, and local levels. By enhancing America's preparedness, the likelihood that an event will occur, or the consequences if it does occur, will be reduced. The Department of Defense is committed to providing preparatory assistance and stands ready to contribute its unique capabilities when called upon.

CHAPTER 8

INFORMATION SUPERIORITY AND SPACE

DoD is committed to taking full advantage of the opportunities provided by the Information Age by improving situational awareness and the ability to share this awareness to support new operational concepts and a knowledge-based workforce. To this end, the Assistant Secretary of Defense for Command, Control, Communications, and Intelligence (ASD(C3I)) also has been designated as the Chief Information Officer of the Department, and has been assigned responsibilities for space-related policy, acquisition oversight, and guidance.

INFORMATION SUPERIORITY

Information superiority is all about getting the right information to the right people at the right time in the right format while denying adversaries the same advantages. The United States enjoys a competitive advantage in many of the technical components of information superiority, but the U.S. also has vulnerabilities stemming from its increasing dependence on high technology. Experiences from Somalia to the Balkans have shown that low technology adversaries also can wage effective information campaigns, especially in urban environments.

Given that DoD information can be adequately assured, and the opponents' capabilities are appreciated, U.S. strengths in the information domain can be translated directly into competitive advantages by emerging network-centric concepts that are designed to leverage high-quality shared awareness. Moreover, the Department's financial, logistics, and acquisition practices can be improved significantly by the use of information technology and improved business practices. Thus, information superiority is reflected in both the Revolution in Military Affairs (RMA) and the Revolution in Business Affairs (RBA). These twin revolutions are mutually supportive.

IMPORTANCE OF INFORMATION SUPERIORITY

In the Information Age the opportunities and obstacles to achieving national security objectives will often be informational in nature. Information superiority is a principal component of the transformation of the Department. The results of research, analyses, and experiments, reinforced by experiences in Kosovo, demonstrate that the availability of information and the ability to share it significantly enhances mission effectiveness and improves efficiencies. Benefits include: increased speed of command, a higher tempo of operations, greater lethality, less fratricide and collateral damage, increased survivability, streamlined combat support, and more effective force synchronization. Kosovo also highlighted the shortage of assets for intelligence, surveillance, and reconnaissance and the need for more secure interoperability and information protection, especially within coalitions.

The ability to move information quickly to where it is needed and to create shared awareness provides an opportunity to develop new concepts of operation and approaches to command and control (C2) that are more responsive, provide greater flexibility, and increase combat power. To achieve their full potential, however, these new concepts and approaches need to be co-evolved with changes in organization, doctrine, material, personnel, and the like. New approaches to command and control include integrating the now separate and sequential processes for planning and execution and the capability for forces to be self-synchronizing. Based on a common understanding of the situation and the commander's intent, these forces are able to be more proactive and shape the battlefield, as well as to respond quickly in a coordinated fashion.

SPACE

Space is a domain like the land, sea, and air where military activities are conducted. Access to and use of space is central to DoD accomplishing its missions. U.S. joint forces successfully exploit space capabilities today across the spectrum of military operations. Space and space related activities enable detection of missiles inbound against the U.S. or its allies; enhance command and control of U.S. forces; target weapons; and forge worldwide deployments into a single, global force, able to deter and defend against major regional contingencies, engage in small operations, and lead peacekeeping operations. Unimpeded access to and use of space is and will remain a vital national interest. Space is now part of the tactical battlefield and its use is growing. U.S. forces can respond to crises faster and have fewer troops in harm's way because commanders can use space to reach back to CONUS bases for support. DoD needs to ensure its systems are interoperable and fully integrated across the land, air, sea, and space.

Space forces and space-based capabilities are integral to the deterrent posture of the U.S. armed forces. They help to ensure that preparations for and initiation of hostile actions will be discovered in a timely manner and they introduce an element of uncertainty into the minds of potential adversaries about whether they can achieve their aims. Space forces are critical to the ability of the United States to ensure the costs of the threat or use of force are unacceptable to potential aggressors. The deterrence of aggression and the defense of the United States and its allies will be strengthened by ensuring that adversaries cannot achieve an asymmetric advantage by countering U.S. space capabilities or using space systems or services for hostile purposes.

Space forces contribute to the overall effectiveness of U.S. military forces in the event deterrence fails. The high technology force multipliers provided by space systems enhance the combat power of military forces. The capability to control space, if directed, will contribute to achieving the full dimensional protection, battlespace dominance, and information superiority necessary for success in military operations. Space forces thus will enable the United States to compel an adversary to cease and desist from the pursuit of its aims through the use of necessary and proportional force.

Ensuring the freedom of space and protecting U.S. national security interests in the medium are priorities for space and space-related activities. U.S. space systems are national property afforded the right of passage through and operations in space without interference. In this regard, space is much like the high seas and international airspace. The political, military, and economic value of the Nation's activities in space, however, may provide a motive for an adversary to counter U.S. space assets. Purposeful interference with U.S. space systems will be viewed as an infringement on U.S. sovereign rights.

INFORMATION SUPERIORITY STRATEGY AND GOALS

ELEMENTS OF INFORMATION SUPERIORITY

Achieving information superiority requires organizing information to create knowledge and then providing that knowledge reliably and in a timely manner to decision makers. Information increases dramatically in value when combined into a coherent picture. However, this value is not realized until it reaches someone who can use it to create a shared awareness. Thus, the importance of interoperability—the ability of different organizations and systems to share and utilize information—is paramount. DoD must have a comprehensive approach to integrating the Department's information processes and to achieving interoperability across organizations and systems. Without it there will continue to be gaps and barriers that diminish the quality, quantity, and timeliness of information that is available for operations. Shared awareness allows for synchronized efforts. Thus, it is important not only that situation-related information is shared, but also that there is a capability for collaborative decision making and sharing of commander's intent, plans, and implementing actions. These create the conditions necessary to synchronize actions dynamically in response to developing situations and to take advantage of opportunities as they occur.

While the Information Age has created enormous opportunities, it has also created significant vulnerabilities for those who depend upon an uninterrupted flow of quality information to support operations. Protecting DoD information and information assets is a basic necessity. Protection and redundancy must be engineered in from the outset, not added on as an afterthought. Since information superiority is a relative concept, operations to disrupt, deny, degrade, destroy, and exploit an adversary's information and information processes are an integral part of achieving, maintaining, and leveraging information superiority.

PREREQUISITES FOR PROGRESS

There are three prerequisites for progress toward information superiority—innovation, co-evolution, and the achievement of a critical mass of information infrastructure (infostructure).

INNOVATION

Successful innovation depends on an understanding of the possibilities, the ability, and tools to experiment with new concepts and capabilities, recognizing at the same time that some innovations will fail. This involves the technical and operational communities, as well as opportunities for joint experimentation. Strong ties between the technical and operational communities provide warfighters with a better understanding of the capabilities and opportunities that emerging information concepts and technologies provide, and provide systems designers and developers with a better appreciation of operational requirements and environments. Experimental venues facilitate innovation by providing opportunities for discovery and capturing empirical data for analysis.

CO-EVOLUTION

Successful introduction of information technology must be accompanied by significant changes in business practices which are key to creating and leveraging information superiority. Therefore, concepts of operation, command approaches, systems, organization, and doctrine must co-evolve together and thus must be an integral part of DoD's investment strategy. The need for co-evolution must also be reflected in experimental venues. The force structure of tomorrow must take into account the requirements for human

expertise, skills, and experience necessary to create and manage knowledge. Entering the 21st century, information technologies are advancing at unprecedented rates; DoD must be in a position to anticipate and leverage these technologies.

INFOSTRUCTURE AND TECHNOLOGY INVESTMENTS

A critical mass of protected information and information processing capabilities; trained personnel; and assured connectivity is needed so warfighters can gain hands-on experience with the power of information and the possibilities of networking. The achievement of information superiority is not a one-time milestone, but rather a continuing process of identifying the best that technology has to offer while adapting and integrating it to DoD needs.

MAKING INFORMATION SUPERIORITY HAPPEN

To ensure that the above prerequisites are in place, DoD is developing appropriate policy and oversight initiatives, actively pursuing opportunities to improve international cooperation in the areas of Command, Control, Communication, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) and space-related activities, partnering with industry, and working to anticipate and understand the implications of emerging information technologies.

POLICY AND OVERSIGHT

Current advances in information technology are redefining the way DoD does business, as well as creating new economic opportunities in the commercial sector. The enormous crop of technology available in recent years is the result of government-sponsored research and development investments in seminal research and technologies many years ago. Today's challenges include both investment choices for future technologies and insertion of current products into information superiority capabilities for the warfighter. Technology insertion, however, can be very disruptive unless it is accompanied by appropriate changes in enterprise organizations, procedures, training, and standards. To address these challenges, the Department is developing an information superiority advanced technology plan that provides guidance and focus to current and emerging DoD and commercial research and development. The Department has also strengthened ASD(C3I) involvement in oversight of Advanced Concept Technology Demonstrations (ACTDs). Finally, the Department has defined metrics for information superiority, and is planning a joint command and control experiment in 2001 centered on information presentation and comprehension.

INTERNATIONAL COOPERATION

The success of future military operations across the spectrum of conflict depends on the ability of the United States and its partners to exchange information quickly, unimpeded by technological barriers. Lessons from Kosovo indicate that the inability to share information in secure, interoperable ways can have adverse mission consequences. DoD is taking concerted action to inform other nations of its plans for the future and to seek opportunities for cooperative developments that will improve interoperability. Where appropriate, multinational fora such as the Multinational Interoperability Council, the NATO Consultation, Command, and Control Board and its subcommittees, the Combined Communications Electronics Board, the Quadilateral C3 Senior National Representatives forum, the NATO Partnership for Peace Program, the Southeast Europe Defence Ministerial initiative, and the Quadilateral International Cooperative Opportunities Group are used to engage allies and partners in a productive dialogue and to develop the necessary partnerships. The United States contributes to these efforts by providing technology

for command and control, communications, and crisis management, as well as assistance with C3 architecture development and systems engineering. Specific examples of DoD's efforts during 2000 include the NATO Defense Capabilities Initiative (DCI), Year 2000 Outreach program, and initiatives in the areas of information assurance (IA), battlefield information collection and exploitation, and multifunctional information distribution. DoD engaged in international consultations on remote sensing cooperation and concluded agreements with Canada and Japan. DoD continued to support ongoing efforts to discuss national security space equities at the UN Conference on Disarmament and Committee on Peaceful Uses of Outer Space.

PARTNERSHIPS WITH INDUSTRY

DoD works closely with the U.S. defense industry to promote international industrial teaming and to keep the C3 community apprised of DoD plans and strategies for the future. The benefits of this closer relationship include increased chances for improving interoperability and broader markets, and increased competition leading to more affordable products and insights into the plans of the other nations. The establishment of partnerships between the defense space sector and the intelligence, civil, and commercial space sectors will serve to balance investments, enable the leveraging of scarce resources, and reduce the cost of acquiring, operating, and supporting operational space force capabilities. The Department led the successful effort to define licensing criteria for commercial radar, hyperspectral and second-generation electro-optical systems, finalized an interagency agreement on licensing of private remote sensing satellite systems, developed a government strategy on foreign remote sensing space cooperation, and assisted the National Oceanic and Atmospheric Administration (NOAA) on finalizing the Commercial Remote Sensing Licensing Regulations.

INFORMATION SUPERIORITY GOALS

One of DoD's principal information superiority goals during 1999 was to maintain the capability to execute its missions throughout the Y2K rollover. This commitment to the American people was met. The following goals are being pursued in parallel, though they are maturing at different rates.

CREATE AN INFORMATION SUPERIORITY TEAM

The foundation of all other goals is to attract, motivate, train, and sustain a world class team dedicated to creating and leveraging information superiority within DoD.

IMPLEMENT EFFECTIVE PROGRAMS FOR ESTABLISHING INFORMATION ASSURANCE AND CRITICAL INFRASTRUCTURE PROTECTION

The Department's defense in-depth strategy protects critical assets and processes needed for mission accomplishment through effective training and certification of personnel, improved security operations, public key infrastructure (PKI), an integrated attack sensing and warning capability, the capability to conduct computer forensics, and the ability to leverage IA and critical infrastructure protection (CIP) technology solutions. DoD must also develop policies to define the use of commercial products and ensure business practices keep pace with electronic capabilities. DoD must work with allies and coalition partners to protect information since, in an interconnected world, this translates into the ability to protect DoD's information and critical infrastructure.

BUILD A COHERENT GLOBAL INFORMATION GRID

The Global Information Grid is a major initiative that takes an enterprise view of DoD networking, computing, interoperability, and information assurance. It places emphasis on both the importance of information as a strategic resource and the need for greater compatibility of information technology with commander in chief (CINC), Service, and agency mission-critical operational processes.

ACHIEVE END-TO-END C4ISR INTEGRATION

An integrated joint and combined C4ISR capability is necessary to ensure that information will be available, relevant, accurate, protected, authenticated, and provided in a useful and timely manner.

PROMOTE THE DEVELOPMENT OF KNOWLEDGE-BASED WORKFORCE

Improved productivity in the Information Age depends, in large measure, upon the creation and maintenance of reusable knowledge bases; the ability to attract, train, and retain a highly skilled workforce; and core business processes designed to capitalize upon these assets. Central to this effort is the employment of a number of strategies aimed at optimizing information sharing, collaboration, and reuse.

STRENGTHEN DEFENSE INTELLIGENCE FOR THE 21ST CENTURY

Getting needed intelligence information to decision makers in a timely and useful manner is critical in achieving information superiority. Intelligence faces significant challenges to meet the requirements of the 21st century. The Department must revitalize and reshape the intelligence workforce. The Department faces personnel shortfalls in linguists, all-source analysts, human intelligence collectors, and cyber specialists. The Department must transform and streamline its intelligence processes across: tasking, collection, processing, analysis, exploitation, and dissemination to keep pace with the changing threat environment. The Department must strengthen its collaboration with industry, academia, and other non-traditional intelligence partners. The Department must address hard technological problems such as increased use of: deception and denial, more sophisticated commercial encryption, and fiber optic and cellular communications. The Department should place particular emphasis on integrating new SIGINT and MASINT technologies into intelligence capabilities.

STRENGTHEN INFORMATION OPERATIONS, SECURITY, AND COUNTERINTELLIGENCE

Foreign intelligence services and non-state actors are targeting the Department's secrets and critical program information. DoD is committed to countering such threats and protecting against trusted insider misconduct by updating policies and programs and developing a more aggressive posture to counter foreign threats and to protect against trusted insider misconduct. Further, DoD will rationalize security requirements to ensure secure information sharing among coalition partners while continuing to protect against the improper release of information. In so doing, the level of security awareness throughout DoD and its coalition partners will be increased.

PROMOTE ELECTRONIC COMMERCE AND BUSINESS PROCESS CHANGE

In order to realize the gains associated with Information Age technologies, DoD is committed to developing and implementing new ways of doing business that are designed to leverage the power of information. The Department is also committed to using electronic business/electronic commerce principles, processes, and technologies as the primary means of transacting its business.

FOSTER DEVELOPMENT OF AN ADVANCED TECHNOLOGY PLAN FOR INFORMATION SUPERIORITY

The convergence of disparate technologies into a package that has operational utility requires the development and implementation of a coherent plan. Therefore, DoD is developing an advanced technology plan for information superiority to rationalize investments, coordinate and leverage research, and focus efforts on high priority areas.

CREATING THE INFOSTRUCTURE

THE INFOSTRUCTURE VISION

The quality of DoD's infostructure will be a pacing item on the journey to the future. The ability to conceive of, experiment with, and implement new ways of doing business to harness the power of Information Age concepts and technologies depends upon what information can be collected, how it can be processed, and the extent to which it can be distributed. The ability to bring this capability to war will depend upon how well it can be secured and its reliability. DoD envisions an infostructure that is seamless with security built-in, one that can support the need for increased combined, joint, and coalition interoperability, leverages commercial technology, and accommodates evolution.

SEAMLESS AND COHERENT

To facilitate the end-to-end flow of information necessary to support network-centric operations, information processes must be transparent to users. DoD systems must transition from isolated stove-piped environments to a seamless and coherent infostructure. This requires the establishment of a Department-wide mechanism for gaining visibility into the many separate planning, budgeting, acquisition, operations, and maintenance activities that contribute to DoD's information systems and processes. DoD's Global Information Grid is designed to achieve this by creating a DoD-wide network management solution, comprised of enterprise network policies, strategies, architectures, focused investments, and network management control centers that bring order out of the current, highly fragmented Service-centric DoD information infrastructure.

BORN JOINT AND COALITION

Future operations will be joint, include reserve components and civilian specialists, and most likely will involve partnerships with other countries to form a coalition. Their effectiveness will depend not only upon the ability of DoD to share information and collaborate internally but externally as well. Therefore, interoperability must be considered a key element in all DoD operational and systems architectures. That interoperability must include the ability to overcome language and cultural barriers. Experience shows that after the fact interoperability fixes are costly, do not satisfy mission requirements, and create security problems. Success is achieved by incorporating interoperability from the start.

LEVERAGES COMMERCIAL TECHNOLOGY

The engine driving advances in information technologies is in the commercial sector. DoD benefits from the sheer size of the commercial marketplace for information technology which drives down the costs of off-the-shelf capabilities, fuels an unprecedented rate of improvement in cost/performance, and makes interoperability easier to achieve. As a result, DoD now can reap the benefits of private sector investments,

saving scarce R&D dollars to invest in militarily significant areas that the commercial sector is not addressing. The downside is that the latest technology is now available to potential foes and allies alike.

SECURITY BUILT IN

Security, like interoperability, must be incorporated into systems designs from the beginning to be effective and affordable. Security must be co-evolved with approaches to interoperability since new/revised links among systems increases vulnerabilities. While DoD's continuing migration from analog to digital systems will facilitate efforts, there will always be legacy systems and systems that coalition partners use that lack adequate security. DoD is exploring approaches to deal with these exceptions; however, these will in all likelihood entail limiting the functionality and utility of these nonconforming systems.

ACCOMMODATES EVOLUTION

Change is the constant of the Information Age. DoD infostructure must be designed to accommodate rapid change as both requirements and technologies evolve. A comprehensive strategy that consists of appropriate architectures, standards, design principles, configuration management, and regression testing will be incorporated into DoD's infostructure processes.

INFOSTRUCTURE INITIATIVES

ARCHITECTURES FOR JOINT VISION 2020

An integrated national security architecture is being developed to eliminate unnecessary vertical stovepiping of programs, minimize unnecessary duplication of missions and functions, achieve efficiencies in acquisition and future operations, provide strategies for transitioning from existing architectures, and thereby improve support to military operations and other national security objectives. This integration effort includes the various sources of intelligence, surveillance, and reconnaissance capabilities. Thus, these communities will be able to more efficiently access and exploit information from multiple sources as well as to integrate the end-to-end intelligence cycle to provide timely, relevant information products.

DEFENSE ENTERPRISE COMPUTING CENTERS (DECCs)

DECCs, based in the continental United States, process combat and combat support requirements for warfighters deployed around the world. DoD has substantially reduced the cost of this processing by modernizing and consolidating 194 Service and Defense Agency Information Processing Centers into five Defense Enterprise Computing Centers with 14 DECC detachments providing regional and local computing and information technology support.

GLOBAL INFORMATION GRID (GIG)

GIG is an enterprise view of DoD networking, computing, interoperability, and information assurance consisting of a globally interconnected, end-to-end set of information capabilities, associated processes, and personnel for collecting, processing, storing, disseminating and managing information on demand to warfighters, policy makers, and support personnel. The end goal is a secure, robust, integrated, and interoperable architecture that is effectively managed to help achieve information superiority.

To implement the GIG, the CIO will provide a sound set of principles; use the DoD CIO Executive Board to address critical enterprise IT issues; develop an integrated, synchronized architecture to manage

complexity and diversity, and ensure an enterprise approach; and implement processes to enforce compliance with architectures and policies.

A critical element of an integrated architecture is a common set of technical standards. The DoD Joint Technical Architecture (JTA) identifies the minimum set of standards and guidelines to be used when acquiring all new systems or upgrading existing ones. Since the JTA contains a large number of standards a web-accessible JTA is being developed to facilitate consistent selection of applicable standards.

GLOBAL COMMAND AND CONTROL SYSTEM (GCCS)

GCCS is a warfighter-oriented system and is the single joint command and control (C2) system for the Chairman, Joint Chiefs of Staff. GCCS supports the National Command Authorities (NCA) and subordinate elements in conducting synchronized operations from dispersed locations. GCCS allows commanders in chief (CINCs) and joint task force (JTF) commanders to maintain dominant battlefield awareness through a fused, integrated, near real-time picture of the battlespace. It provides them with integrated imagery and intelligence situational awareness, indications and warnings, collaborative planning, course of action development, and intelligence mission support. In FY 2000, GCCS released several new mission applications and baseline updates, migrated selected GCCS applications to the NT environment, and developed/fielded embedded training tools for GCCS applications and new modules of the Readiness Assessment System.

SPECTRUM MANAGEMENT

The use of high technology weapons, satellite and ground communications, radio navigation, surveillance, and satellite control systems continue to increase the Department's reliance on assured access to the electromagnetic spectrum and the need for a more integrated approach to spectrum allocation. DoD fielded a standard automated system to assist warfighters with frequency management and spectrum allocation, developed a system to determine risks of electromagnetic environmental effects on ordnance, established a process for preparing and coordinating DoD positions to support international spectrum decisions, revised acquisition policies to ensure that the electromagnetic spectrum is considered during system development or procurement, and developed a common costing process model to analyze effects of spectrum reallocations to DoD. Although the Department successfully defended spectrum critical to national security during the International Telecommunication Union 2000 World Radiocommunication Conference, the Department of Commerce has since advised that certain bands vital to DoD operations continue to be at risk for reallocation. Bands used by DoD satellites are especially at risk since viable satellites already in orbit are major capital systems that cannot be refitted to use alternate bands of spectrum.

GLOBAL COMBAT SUPPORT SYSTEM (GCSS)

GCSS provides real-time logistics support to the warfighter across DoD for transportation, supply, maintenance, engineering, personnel, force health protection, acquisition, and finance functions needed to support and sustain the operational requirements of CINCs, JTFs, NCA, Service components, and Services. Sustaining investments in technology and in the transformation of logistics business processes will continue to improve the United States' ability to capture essential data elements at the source, transforming them into actionable information thereby compressing the decision-making cycle and improving the readiness posture.

GCSS CINC/JTF

The GCSS CINC/JTF is being deployed to CINCs to meet current operational requirements. In FY 2000, GCSS CINC/JTF developed the capability to provide field commanders with an integrated logistics view of resources across the battlespace and in the support pipeline.

DEFENSE INFORMATION SYSTEM NETWORK (DISN)

DISN is DoD's consolidated global enterprise-level telecommunications infrastructure. Worldwide DISN implementation provides an information transport infrastructure to DoD locations around the world, wherever the Department's missions take its people. Accomplishments during FY 2000 include the uninterrupted transition of the DISN to Y2K compliance and operation as well as the expansion of network and computer protection policies started in FY 1999.

JOINT WORLDWIDE INTELLIGENCE COMMUNICATIONS SYSTEM (JWICS)

The Defense Intelligence Agency (DIA) provides the Defense and the Intelligence Community worldwide Top Secret Sensitive Compartmented Information (SCI) communications via JWICS. This high-speed multimedia communications system provides critical 24-hour-a-day, 7-day-a-week intelligence operations support that includes data, voice, and video teleconferencing. Accomplishments during FY 2000 include the uninterrupted transition of the JWICS network to Y2K compliance and the beginning of the modernization of the network to Asynchronous Transfer Mode (ATM).

DEFENSE MESSAGE SYSTEM (DMS)

DoD's primary means of messaging communications (AUTODIN) is being replaced by DMS—a flexible, commercial-off-the-shelf network-centric system. DMS provides multimedia messaging and directory services using the underlying network and security services of the GIG.

JOINT INTEROPERABILITY TEST COMMAND (JITC)

JITC reduces risk to the warfighter by ensuring compatibility, integration, and interoperability throughout the life cycle of DoD National Security Systems/Information Technology Systems (NSS/ITS). During FY 2000, JITC certified U.S. forces' platforms for Tactical Data Information Link (TADIL) A/B/J conformance, completed TADIL interoperability certification/validation tests, conducted the DoD Interoperability Communications Exercise (DICE) employing over 20 systems, and provided solutions to CINC's operational interoperability problems.

PROTECTING DOD'S INFORMATION INFRASTRUCTURE

DoD integrated protection initiatives are needed to ensure that its cyber and physical infrastructures perform as necessary for the execution of DoD missions.

CRITICAL INFRASTRUCTURE PROTECTION (CIP)

As DoD transitions to a network-centric enterprise, interdependencies become increasingly important. It is necessary to fully understand the connectivity and interdependencies of DoD infrastructures that interface with commercial infrastructures on base, off base, within the U.S., and overseas. These infrastructure services support critical military activities and, if disrupted, could seriously affect the operational readiness

and availability of U.S. military forces. While the commanders focus on protecting their critical infrastructures within their operational environments, DoD's CIP program focuses on defense-wide infrastructure services, including financial, information, logistics, transportation, space, personnel, health, public works, command and control communications, intelligence and surveillance, and emergency preparedness.

The Department continued to use the approach validated during its Y2K experience. Specifically, the operationalization of critical infrastructure protection by focusing on CINC identification and review of operation plans and mission areas, identifying required critical infrastructures and assessing vulnerabilities based on required capabilities. In support of this effort, DoD continued to develop standardized assessment protocols for cyber/physical, on/off-base integrated vulnerability assessments, and tested the protocols in a series of balanced survivability assessments. Regional assessments were conducted of the Pacific Northwest DoD sites and supporting commercial and DoD infrastructures. Host nation critical infrastructure assessments were also conducted for the CINCs, OSD, Services, and DoD agencies, so they could take effective actions to facilitate contingency planning and ensure continuity of operations as part of the Department's global Y2K efforts. Working with several allies, DoD conducted international table-top exercises to identify the most pressing issues to be addressed to ensure interoperability across the spectrum of DoD operations.

ASSURANCE

Assuring the information U.S. forces need when they need it means DoD's programs, policies, and procedures are developed to ensure the availability, integrity, authentication, confidentiality and non-repudiation of all its data, information, and knowledge as it is collected and disseminated across the Global Information Grid. This vision provides the focus for the Department to create a secure and reliable infostructure (information infrastructure) and supports an integrated approach to developing requirements, acquiring systems, and programming for the future force.

Defense-in-depth is the strategy the Department developed to assure the readiness of its infostructure. Defense-in-depth provides for a layered defense aimed at deterrence, protection against attacks or disasters, detecting and defeating attacks, and reconstituting its infostructure if required. It recognizes that people, operations, and technologies are the critical components of this strategy and it is the synergy between these elements that ultimately creates the level of assurance DoD requires to successfully complete its missions.

In 2000, the Department continued to build toward a robust IA program by focusing on activities that target identified shortfalls in people, operations, and technology. After completing a comprehensive review of its IA/IT Management skill sets, DoD has implemented several actions to improve the management of its IA/IT workforce focused on standardizing training and certification. In addition, completion of DoD computer investigations training facility will help us build and maintain an expert IA workforce.

Improving operations for IA saw DoD complete the establishment of the DoD Computer Forensics Lab (DCFL) late in 1999 and in March of 2000 DoD strengthened its responsiveness to computer attacks by instituting a comprehensive Information Assurance Vulnerability Alert (IAVA) program. This combined with the employment of "Red Teams," interdisciplinary teams that are threat-based opposing forces used to

expose and exploit the information system vulnerabilities of friendly forces, helped to significantly strengthen the Department's IA posture and defenses against cyber attack.

Key IA policies were crafted for the GIG, computer network defense (CND) and encryption export standards which will help guide DoD toward a more assured operating environment in the future. In August 2000, DoD PKI policy was updated to incorporate use of smart card-based hardware tokens beginning December 2000. This will allow migration to more robust PKI-based network access control mechanisms and a more robust protection of sensitive data, particularly on mission critical information systems.

SECURITY

DoD security missions and programs must work in widely diverse security environments—from the office to the foxhole occupied by warfighters from other countries. In response to a rapidly evolving security environment, the Department is pursuing an active security paradigm. Active security integrates traditional security missions and programs with the Department's defense-in-depth and risk management strategies. The active security paradigm also provides visibility into the Department's numerous missions and programs that protect its assets. The approach focuses on consistent department-wide assessments of the risks and resources needed to counter threats. The increased visibility resulting from these assessments permits security officials to collaboratively assess what protective measures are most appropriate to manage the evolving risks caused by new and emerging threats in an increasingly complex global environment.

COUNTERINTELLIGENCE

The counterintelligence (CI) challenges facing DoD are both dynamic and global in scope. To confront these challenges proactively, DoD worked with their CI counterparts in the Federal Bureau of Investigation (FBI) and the Central Intelligence Agency (CIA) to develop a new strategy called CI 21. To make CI 21 a reality, authority will be vested in a CI Board of Directors, chaired by the Director, FBI, and composed of the Deputy Secretary of Defense, the Deputy Director, CIA, and a senior official from the Department of Justice. The Board will appoint a National CI Executive who will serve as the Nation's leader for CI with full access to all sensitive CI activities. This new leadership schema will give DoD unprecedented ability to protect its secrets and leverage the capabilities of all national CI forces.

In addition, DoD will form a new Joint CI Center (JCIC) which will provide the same strategic focus and unity of effort for support to the combatant commands. This concept was developed and tested during the Kosovo conflict, and was found to be highly successful. This initiative will build on the base of an existing small Joint CI Support Branch, and will be able to support several contingency operations simultaneously.

DoD will continue to expand support to critical technology protection, and enhance support to force protection and combating terrorism efforts. The new Joint CI Training Academy (JCITA) will be brought to full operational capability and the innovative Joint CI Analysis Group (JCAG) will be brought to initial operational capability.

ENABLING THE WARFIGHTER

Information superiority for the warfighter requires that the right information is collected, processed, protected, and distributed to create shared awareness of the battlespace and that the necessary tools are in place to facilitate command and control of forces.

INTELLIGENCE, SURVEILLANCE, AND RECONNAISSANCE (ISR)

Over the next decade, DoD is implementing an Intelligence, Surveillance, Reconnaissance Integrated Capstone Strategic Plan (ISR-ICSP) to provide integrated and responsive ISR capabilities operating in a collaborative enterprise and assuring the delivery of timely, relevant information for the NCA and joint/combined forces. Initiatives are underway to improve information infrastructure, operations/ISR integration, air/space integration, ISR integration, interactive collection management, collectors and new capabilities, and multiple intelligence collaboration. This emphasis on integration of national/theater/tactical sensors, commanders, and shooters will enable U.S., allied, and coalition forces to strike rapidly and decisively at extended ranges against time-critical targets.

DoD is also focused on the development of new ISR systems and selective modernization of current systems. Several initiatives underway that facilitate the use of ISR capabilities include the publication of summary documents, the use of C4ISR support plans, study and analysis efforts, and emphasis on ISR support to time-critical targeting operations. Additionally, the Joint Chiefs of Staff have completed several complementary studies which qualified and quantified ISR shortfalls, resulting in the near-term reallocation of ISR assets among the CINCs, and identified long-term ISR requirements. JCS has restructured its Joint Warfighting Capabilities Assessment (JWCA) process, that will strengthen its role in requirement formulation and approval for ISR systems. Based on Kosovo lessons learned, additional emphasis has been placed on time-critical targeting and battle damage assessment.

IMAGERY INTELLIGENCE

Senior Initiatives. DoD is continuing to progress toward the next generation Imagery Intelligence (IMINT) capability by modernizing airborne platforms like the U-2, fielding improved sensors, and fielding of the Global Hawk Unmanned Aerial Vehicle (UAV). The Advanced Synthetic Aperture Radar System (ASARS) Improvement Program (AIP) for the U-2 fleet will improve all-weather, day/night imaging capability to provide increased area coverage, improved imagery resolution for target detection and identification, geolocation accuracy sufficient for precision-guided munitions (PGMs), and a moving target indicator (MTI) capability. Improvements in the Senior Year Electro-Optical Reconnaissance System (SYERS) include incorporating a multi-spectral imaging capability (MSI) and improving sensor resolution at longer ranges, geolocation accuracies, and area coverage. AIP and SYERS Pre-planned Product Improvement (P3I) will significantly improve combat capability and enhance the warfighter's ability to detect and prosecute time critical targets (TCTs); a critical shortfall identified by Kosovo lessons learned. These systems will also help to provide the ISR capabilities needed to support military operations in urban terrain. Technology and some equipment from the AIP and SYERS P3I will also be applied to Global Hawk sensor improvements along with accelerated platform improvements.

Future Imagery Architecture (FIA). With the award of FIA, the Department has made significant progress implementing the next generation satellite IMINT capability. In addition, the Department has restructured the Radar Technology Improvement Program (RTIP) for multi-platform application including

Joint Surveillance Attack Radar (JSTARS) and Global Hawk. The Department is also promoting the use of commercial imagery satellite capability in conjunction with national collection assets and associated value-added products and services.

Studies. The Department is factoring the results of ISR studies into Service and agency modernization programs. The MTI/IMINT Fusion Study identified requirements and opportunities for integrating MTI capabilities from various platforms as well as integrating and cross cueing MTI data with imagery. The ongoing Decision Support Center Multi-INT Fusion Study will identify and characterize the improvements associated with integrating multiple intelligence service information needs.

Tasking, Processing, Exploitation, and Dissemination (TPED). One of the major operational challenges for imagery support to warfighters is TPED infrastructure improvements. Efforts underway include developing and integrating FIA interfaces, providing a balance of imagery and geospatial investment and ensuring that baseline capabilities include the highest priorities. The National Imagery and Mapping Agency (NIMA) is managing TPED improvements to fully exploit national, airborne, and commercial imagery. Resources were added beginning in FY 2001 to meet increased demand for precise geolocation, reduced decision cycle timelines, and greater processing capability. NIMA, the Department of Defense, and the Community Management Staff, continue to implement the guidance set forth by the Deputy Secretary of Defense and the DCI to provide the necessary TPED infrastructure.

SIGNALS INTELLIGENCE (SIGINT)

The National Security Agency (NSA) completed both an internal and external study of the agency and initiated an effort to transform the Unified Cryptologic System to meet Unified Cryptologic Architecture for 2020 goals. NSA's internal response to the changing intelligence environment is documented in the NSA Business Plan. The Intelligence Community (IC) and DoD are fully engaged in NSA's transformation and committed to ensuring current readiness capabilities are appropriately risk-managed during the modernization.

Evolutionary upgrades to the Integrated Overhead SIGINT Architecture (IOSA) will ensure a durable satellite collection capability. Furthermore, efforts to revitalize the field of Electronic Intelligence (ELINT) reached a critical stage with the publication of a community-vetted strategy for future investment/reinvestment and an ELINT Business Plan that was delivered September 29, 2000. In collaboration with the IC and DoD, the Director, NSA (DIRNSA) will establish a Community ELINT Management Office (CEMO), to be jointly staffed and resourced and it will serve as the primary advocate for the ELINT enterprise and its strategy. The CEMO will be chartered to oversee ELINT architectures and perform human resource and program assessments by having visibility into all ELINT programs across the IC and DoD. To institutionalize the importance of interoperability, NSA created the National Tactical Integration Office (NTIO) to better address issues of national-tactical interoperability and collaboration within the Unified Cryptologic System.

MEASUREMENT AND SIGNATURE INTELLIGENCE (MASINT)

DoD, in cooperation with the IC, continues to improve U.S. MASINT capabilities. The first increment of a projected six-year increase in the resources assigned to the Central MASINT Organization was initiated in FY 2000. The focus of the first year was on improving support to joint military operations through the creation of MASINT operations and production coordination elements. In addition, the implementation of

standardized processes and procedures will more efficiently address the needs of MASINT users. DoD is placing particular emphasis on strategies and techniques to strengthen MASINT TPED and increase analytical depth, particularly in the arenas of advanced synthetic aperture radar (SAR), radio frequency MASINT, acoustic collections, multi/hyperspectral information, and missile and nuclear/chemical/biological warfare counterproliferation. There is also an IC-wide effort underway to fully integrate MASINT capabilities into the DoD DCGS architecture.

MISSILE DETECTION/MISSILE WARNING

The Department continues to move forward with replacing the proven theater and strategic missile warning Defense Support Program satellites with the greatly improved Space-Based Infrared System (SBIRS). SBIRS is a complex systems-of-systems program, requiring full integration with both national and theater missile defense programs, as well as infrared technical intelligence, space surveillance, battlespace characterization, and theater CINC MASINT support programs. The greatly improved performance of the SBIRS architecture will significantly enhance not only missile defense programs, but also a wide variety of other mission areas.

Although there have been some delays in fielding the new consolidated SBIRS ground architecture, the first SBIRS-High satellites remain on schedule for launch in FY 2004. In addition, the SBIRS-High high elliptical orbit sensors remain on schedule for a FY 2002 delivery to their host satellites. Finally, SBIRS-Low will baseline its operational requirements and complete a system requirements review in 2001, with first launch planned for FY 2006.

PLATFORMS

Manned Airborne ISR Assets. A high tasking level has been maintained for manned airborne ISR assets throughout 2000, supporting a full range of peacetime and contingency operations. The U-2 fleet improvements continue with upgrades to sensors and aircraft. Initial deliveries for the U-2 ASARS Improvement Program (AIP) sensor with MTI and SYERS P3I electro-optic/infrared (EO/IR) sensor with multi-spectral imagery capability are scheduled for delivery by early FY 2001. The RC-135 Rivet Joint fleet has been expanded from 14 to 16 aircraft, upgraded to a common baseline configuration providing additional communication capability and connectivity to improve warfighter support to theater operations. A third RC-135 Cobra Ball aircraft was delivered, giving the Department a 50 percent increase in airborne MASINT platform capability. Re-engining began on the entire fleet of RC-135 aircraft with an estimated completion date of FY 2005. The EP-3 fleet will be expanded by one additional platform in FY 2001. Additionally, the fleet is scheduled to receive the Joint SIGINT Avionics family (JSAF) modification and Common Data Link (CDL) upgrade. The Army's RC-12 Guardrail 2000, the Guardrail Common Sensor (GRCS) System #2, began fielding in FY 2000. GRCS #2 extends the capability of the airborne Communications Intelligence (COMINT) and SIGINT sensors and introduces a modular, open architecture that is Joint Airborne SIGINT architecture compliant. The system will also incorporate the Communications High Accuracy Location System-Exploitable (CHALS-X) system for precision geolocation of communications emitters. The RC-7 Airborne Reconnaissance Low-Multifunction (ARL-M) #5 rolled out in mid FY 2000. There are currently two configurations of the ARL system: ARL-COMINT (ARL-C) configured with a conventional communications intercept and direction finding payload; and ARL-M with IMINT, COMINT, and moving target indicator/synthetic aperture radar (MTI/SAR) subsystems. In recognition of the importance of MTI/SAR data to the military mission, the RTIP development was separated from the JSTARS Boeing 707 platform to allow for multi-platform

development applications. A platform-independent radar design will allow maximum flexibility in designing a scaleable, modular solid state sensor at the cutting edge of technology and employable on manned and UAV platforms.

DoD expects to continue fielding additional tactical reconnaissance assets. These systems include the Marine Corps F/A-18D Tactical Airborne Reconnaissance System (ATARS) and the Navy's FA-18F Shared Reconnaissance Pod (SHARP). SHARP will replace the Navy TARPS when the F-14 platform is phased out beginning in FY 2003. SHARP will also be produced for the Marine Corps F/A 18D to initially augment and possibly replace the ATARS force structure.

UAV Assets. The Department is in the process of developing a UAV roadmap. This roadmap plans to capture each Service's vision toward bringing their respective UAV systems into the force. The Global Hawk High Altitude Endurance UAV completed the Military Utility Assessment phase (MUA) of its advanced concept technology demonstration (ACTD) and is now making the transition to a formal acquisition program. During the MUA, the Global Hawk demonstrated its long endurance and ISR imagery capability during many military exercises and demonstrations including a flight from Florida to take imagery off the coast of Portugal and then return. A demonstration with Australia, including a round trip flight from CONUS, is also planned for mid-FY 2001. The Predator Medium Altitude Endurance UAV continues to perform admirably in its support of Bosnia and Kosovo peace-keeping operations and has accumulated over 20,000 flight hours. Of the 12 Predator systems procured, the Air Force has now taken delivery of 8 systems. In addition, the Air Force has taken delivery of two prototype laser designators for Predator and plans to equip the Predator fleet with the laser designators in the future. The Army selected the Shadow 200 as its tactical UAV to support the ground maneuver brigade commander. The Shadow 200 is presently in Low Rate Initial Production (LRIP) with a 44-system program procurement objective. Initial operating capability (IOC) is planned for FY 2003. The Navy and Marines selected the FireScout vertical takeoff and landing tactical UAV to support their operations ashore and afloat. The FireScout is in development and its program procurement objective is 23 systems. IOC is FY 2003. The legacy Pioneer UAV systems will continue to be supported until replaced by FireScout in FY 2003. The U.S. Joint Forces Command is fielding the Tactical Control System Joint Operational Test Bed System to explore and develop joint interoperability concepts among the various UAVs.

Space Assets. Both classified and unclassified space assets continued to provide a broad range of support in peacetime, crisis, and conflict. The ability of space systems to provide access to any region on the globe, and provide total continuous coverage for such mission areas as navigation and missile warning make them a cornerstone of U.S. defense forces. The Department supports the contribution of space systems through closer integration with airborne and terrestrial systems for seamless intelligence, surveillance, and reconnaissance collection along with augmentation by commercial systems, particularly commercial imagery. U.S. Space Command and the Intelligence Community have improved their coordination in defining future space program requirements and remain the focal points for user needs.

GROUND/SURFACE SYSTEM SUPPORT

The DoD has adopted a multi-source ISR integration strategy for the JTF and below called the Distributed Common Ground System (DCGS). The scope of the strategy is to migrate ground TPED to a common interoperable baseline. This baseline assures joint ISR interoperability, facilitates multi-INT, multi-source collaboration and tasking, and the integration of air with space ISR operations. DCGS is designed to

operate in three modes: forward deployed, split-based, and reachback. Its employment configuration is driven by the Joint Task Force Commander's requirements. Joint interoperability and multi-INT ISR are the DCGS objectives. To achieve these objectives ASD(C3I) orchestrates the DCGS as a cross-service, cross-agency strategy. The results have led to a distributed architecture used by the Air Force in support of Operation Allied Force and multiple examples of shared use of ISR processing equipment built by one service but used several times across the Services. Common Imagery Ground/Surface Systems (CIGSS) has established core components necessary for all service ground/surface systems to achieve interoperability. This has resulted in a common data link, and common imagery processor, as well as use of imagery exploitation support systems and the imagery product libraries as community standards. The Army-designed tactical imagery system has been adopted by the Navy and forms the basis of the Air Force's approach to ISR battle management. The Department is testing and certifying joint interoperability of the Services ground/surface systems. The goal is that any service ISR platforms/sensors should be interoperable with any services ground/surface systems. Results to date are increased interoperability and the need to transport fewer and smaller systems to the battlefield at a reduced total cost.

COMMUNICATIONS

SATELLITE COMMUNICATIONS

The Department's military satellite communications future architecture includes satellites, terminals, and control subsystems and will provide users with three general classes of service: protected, wideband, and narrowband. Satellite communications is an indispensable enabler of timely battlespace awareness, command and control, and information dissemination in a global arena. DoD approved strategy to transition from current systems to future architecture includes leveraging commercial satellite communications to the maximum extent possible while recapitalizing fixed and mobile ground terminals to use new satellites and spectrum bands, and to improve their capacity, protection, and spectrum-use efficiency.

Protected communications services are survivable to ensure warfighter command and control at all levels of combat. The strategy for protecting communications initially called for launching four Milstar II satellites by 2002, followed by the more capable Advanced Extremely High Frequency system in 2006. However, because the third scheduled Milstar II launch failed, the first Advanced Extremely High Frequency satellite will be launched in 2004 and operate initially in Milstar II mode.

Wideband communications services rapidly move large quantities of C4I information including intelligence products, video, imagery, and data. DoD's wideband strategy is to launch the two remaining Defense Satellite Communications System satellites supplemented by Global Broadcast Service payloads on Ultra-High Frequency Follow-on (UFO) satellites. Two Defense Satellite Communications System (DSCS) satellites were launched in 2000. Three wideband gapfillers will be launched starting in 2004 to reduce the growing gap between tactical wideband requirements and capabilities. A more capable commercial-like advanced wideband system is envisioned starting in 2008.

Narrowband communications services provide networked multi-party and point-to-point narrowband links to tens of thousands of rapidly moving warfighters. DoD launched its last UFO satellite in 1999 and plans to supplement the constellation with a satellite in 2003 to maintain the system through 2007. In 2007, the Department plans to replace UFO with the Mobile User Objective System.

The DoD Teleport project expands on the Standardized Tactical Entry Point (STEP) program begun in the early 1990s. STEP was created to counteract operational deficiencies associated with the lack of pre-positioned Defense Information System Network (DISN) services and the use of non-standard equipment suites, which were revealed during Operation Desert Storm. Currently, the STEP program provides access to DISN services via X-band DSCS. Limited to X-band, STEP cannot meet the growing warfighter needs. Current and projected warfighter requirements also call for support in the Ultra High Frequency (UHF), Extremely High Frequency (EHF), commercial (L, C, Ku, and Ka), and military Ka frequency bands. Consequently, the DoD Teleport will provide the joint warfighter extended satellite communications (SATCOM) capability and DISN services access for worldwide operations.

COMMAND AND CONTROL

JOINT TACTICAL RADIO SYSTEM (JTRS)

DoD continues to enhance tactical communications to provide secure, survivable, and interoperable systems for joint and combined operations of conventional forces. JTRS was initiated to provide the standard for affordable, high capacity, scalable, interoperable tactical radios to replace all of DoD's current radio inventory, avionics upgrades, appropriate satellite terminals, and personal communications equipment. With the development and publication of the Software Communications Architecture (SCA) and software waveforms, the Services will be able to acquire a family of affordable, scaleable, high-capacity, interoperable radios. JTRS will provide the operational forces with an upgraded communications capability for more effective battlespace management and interoperability among Command, Control, Communications, Computers, and Intelligence (C4I) Systems supporting the warfighters' goal of realizing a fully digitized battlespace.

COMMON DATA LINK AND J-SERIES TACTICAL DATA LINKS

The common data link is DoD's primary wideband data link standard to support air-to-surface transmission of radar, imagery, video, and the sensor information from manned and unmanned aircraft. The DoD's J-series family (of Link-16, Variable Message Format, Integrated Broadcast Service, and Link-22) of low rate tactical data link standards is critical for battlefield awareness for joint and coalition forces. The Joint Tactical Data Link Management Plan is the vehicle overseeing Service migrations to achieve an integrated, predominant, joint forces capability by 2005.

SINGLE INTEGRATED AIR PICTURE (SIAP)

SIAP provides the warfighter the ability to better understand the battlespace and employ weapons to their designed capabilities. SIAP will support the spectrum of offensive and defensive operations by U.S., allied, and coalition partners in the airspace within a theater of operations (e.g., attack operations, suppression of enemy air defenses, air and missile defense, intelligence preparation of the battlefield). SIAP is accomplished through a combination of materiel and nonmaterial improvements.

SIAP is not the end-state—it is part of a larger construct that must be engineered so it can easily migrate toward, and support, a coherent tactical picture. As such, it is recognized that SIAP supports joint forces air component commander (JFACC) mission areas involving the tactical employment of airpower. An incremental approach is needed to develop and implement improvements to command and control of existing systems and the integrated architectures within which these systems operate while SIAP is being developed.

DIGITIZATION

The Army continues on the road to a digitized force employing information technologies to acquire, exchange, and employ data throughout the battlespace. The Army is equipping the First Digitized Division (the 4th Infantry Division at Fort Hood, Texas) and will equip the First Digitized Corps by the end of 2004. Army Division XXI efforts encourage innovation and have resulted in a new design for heavy divisions that reduces manpower platform requirements and combat platforms in the maneuver battalions while increasing lethality and survivability.

JOINT SURVEILLANCE TARGET ATTACK RADAR SYSTEM (JSTARS)

JSTARS is an airborne platform equipped with a long-range, air-to-ground surveillance system designed to locate, classify, and track ground targets in all weather conditions and provide targeting and battle management data to all operators, both in the aircraft and in the ground station modules. Aircraft deployed as part of NATO Allied Force operations met high operating tempo requirements, and provided time-critical information to operational decision makers and combat aircrews. Two E-8Cs were deployed in support of Kosovo operations and data from the 93rd Aircraft Wing reflects outstanding JSTARS performance—83 of 86 combat support sorties were accomplished with launch reliability of 99 percent, mission effectiveness of 96 percent, and mission capability rate of 80 percent. Production efforts were equally successful with all aircraft on or ahead of schedule.

COMBAT IDENTIFICATION

Combat identification is the process of attaining an accurate, real-time characterization of potential targets in a combatant's area of responsibility so as to allow the use of weapons or other tactical options. It is essential for overall battle management, operational effectiveness, and reducing fratricide and collateral damage. Systems employed for combat identification include those using cooperative (i.e., radio frequency question and answer) and noncooperative (e.g., analysis of radar return characteristics) methods, as well as methods which rely on radio reporting of friendly units' geographical positions over a network. DoD's current focus is on improving interoperability between the Services, improving combat identification between ground vehicles, and improving combat identification for close air support and deep strike aircraft missions—while leveraging advances already made in combat identification for air defense. A combat identification Capstone Requirements Document is scheduled for completion in FY 2001.

STRATEGIC COMMAND, CONTROL, AND COMMUNICATIONS

DoD continues to maintain survivable and enduring command and control of nuclear forces and weapons. Numerous efforts are underway to sustain and modernize these systems. A strategic C3 modernization planning effort was initiated to explore the utilization of complex information technologies and look at a cohesive C3 approach towards the modernization of the nuclear and senior leadership communication systems, National Missile Defense, and strategic information operations for the 2000 to 2020 timeframe. A Senior Leadership Communications System Executive Management Board was formally established to address information requirements of the Department's senior leaders. Correcting Year 2000 problems and developing contingency planning processes to manage the Year 2000 transition was a high priority and was successful.

PERSONNEL RECOVERY

The directive on Personnel Recovery, June 30, 1997, states that bringing home those who have put themselves in harm's way is one of the highest priorities of the Department of Defense and a moral obligation. Current DoD efforts in this regard are focused on improving Personnel Recovery capabilities for information management, critical communications links, evader location, and intelligence support. This year the Department also issued a revision to the original June 1997 DoD Directive on Personnel Recovery. This revision to the Department's first effort to provide policy oversight over personnel recovery matters, realigns DoD executive agency for recovery from the Air Force to Joint Forces Command, thus reinforcing the joint nature of recovery operations and emphasizing the need for all Services, not just the Air Force, to maintain a robust recovery capability.

INTEGRATION AND INTEROPERABILITY

JOINT AND COALITION INTEROPERABILITY

DoD continues its development of an integrated architecture leading to a Global Information Grid (GIG). The GIG will support warfighters and all other DoD users with a fully integrated information service that is reliable, secure, cost effective, and interoperable. Efforts continue in coalition interoperability as well. The Multinational Interoperability Council was formed in October 1999 and has begun work in improving coalition information interoperability. The major focus of this multinational forum is to address coalition interoperability impediments in the areas of doctrine, policy, procedures, and information sharing. The Council is led by the Joint Staff Director of Operations.

C4 SUPPORT PLANNING

Understanding the C4I infrastructure support requirements for future weapon systems and information systems is critical to ensuring information superiority throughout the battlespace. DoD components develop C4I Support Plans (C4ISPs) for each acquisition program, identifying interoperability and C4I support requirements for each joint/combined military mission and function that the new system will support. During 2000, C4ISPs were prepared for new programs (e.g., Global Hawk) and for programs approaching full rate production and deployment (e.g., F/A-18 E/F and MV-22). Through these plans, requirements are matched against planned infrastructure capabilities to identify where investment schedules must be changed, or technical approaches must be modified.

The operational and system architecture views and the information exchange requirements (IERs) in C4ISPs build upon the architecture and IER data that must now be included in operational requirements documents (ORDs). Architecture-based tools such as the Joint Mission Area Analysis Tool facilitate cross-program assessments of C4I requirements and capabilities, and enable the Department to more effectively identify major system dependencies and manage correction of shortfalls. Revision of both Defense Acquisition System policies and procedures and Joint Staff guidance on requirements generation has now put in place the process to directly link operational requirements (including interoperability Key Performance Parameters) in the ORD to derived support requirements in the C4ISP, and to interoperability testing based on mission outcomes and assured delivery of information from sensors to shooters.

JOINT COMMAND AND CONTROL INTEGRATION/INTEROPERABILITY GROUP (JC2I2G)

JC2I2G was formed in FY 1999 as a result of defense acquisition reform studies directed by Section 912c of the National Defense Authorization Act for Fiscal Year 1998. In FY 2000 the JC2I2G helped create three CINC Interoperability Program Offices (CIPOs) and one Joint Forces Program Office (JFPO). Each CIPO office is co-located at one of the three Service system commands (Army Communication and Electronics Command, Navy Space and Naval Warfare Systems Command, and Air Force Electronic Systems Command). Each CIPO provides engineering advice and assistance in solving CINC integration/interoperability issues for an assigned group of CINCs. The JFPO integrates issues and solutions horizontally across the CIPOs and the CINCs.

JOINT C4ISR DECISION SUPPORT CENTER (DSC) AND MODELING AND SIMULATION (M&S)

DSC completed a number of studies to leverage integrated and interoperable C4ISR to improve combat effectiveness. In FY 2000, the DSC analyzed C4ISR impact on asymmetric warfare, multi-intelligence fusion performance, GIG support to CINC requirements, and interoperability with coalition/allies. M&S tools are critical to the success of DSC studies, and the DSC provides DoD leadership in the development of robust information superiority components of the Department's M&S toolset. During 2000, additional funds were provided to accelerate the development of several ongoing M&S activities. The goal of this initiative is to ensure an M&S framework that can perform realistic technical assessments of current and proposed C4ISR systems and measure their military contribution in the context of current and evolving operational concepts.

INFORMATION OPERATIONS (IO)

Information operations support the objectives of the National Security Strategy by enhancing information superiority and influencing foreign perceptions. In conflict, IO enables information superiority by protecting the integrity of the United States' command and control, and common operating picture, while skewing, or degrading, an adversary's situational awareness. The Department's emerging concept for IO will be the basis for aligning strategy and policy across DoD. When approved, the strategic concept will guide and integrate IO policy, organization, and implementation and the research, development, and acquisition of IO capabilities. Program adjustments will be made as appropriate.

Support functions such as intelligence are integral to IO. To this end, the Intelligence Community, and DoD in particular is adapting or developing new intelligence policies and plans, capabilities, systems, and organizations to meet the current and projected needs of IO, as well as to provide critical and timely information that will assist the Department in force protection.

The Department is pursuing numerous actions to better implement IO. For example, DoD established a Defense IO Council (DIOC) and aligned the computer network defense (CND) and computer network attack (CNA) missions under USSPACECOM.

The DIOC oversees and coordinates the Department's efforts to develop policy and capabilities to support IO. This included a security review of all classified programs that support the development of IO capabilities to ensure they are properly and appropriately safeguarded, yet visible to the warfighter. The Department also conducted a broad area review of IO to develop a resource and capability baseline. This

baseline provides the DIOC a basis for aligning, prioritizing, and integrating various efforts to operationalize IO in a more coherent and efficient manner. In tandem with the security review, ASD (C3I) is revising the Department's Security Classification Guide on IO, and will soon begin a revision of the Department's IO policy.

USSPACECOM has been selected to be the supporting CINC for planning and coordinating all offensive and defensive computer network operations. In October 1999, the Joint Task Force for CND was realigned under USSPACECOM with the mission to monitor all DoD networks, provide tactical warning of orchestrated attacks, and coordinate their mutual defense. To carry out the CNA mission it assumed in October 2000, USSPACECOM is responsible for supporting the regional CINCs with capabilities to deny, degrade, or destroy an adversary's computer networks.

To support Presidential Decision Directive 68, *International Public Information (IPI)*, the Department has chartered a DoD IPI Committee to directly support the IPI Core Work Group at NSC. The function of this committee is to develop and coordinate DoD policy and plans to conduct international military information operations in support of IPI.

The Intelligence Community, and DoD in particular, are revising or developing new intelligence policies and plans, capabilities, systems, and organizations to meet the current and projected needs of IO, as well as to provide critical and timely information that will assist the Department in force protection. To assist in psychological operations (PSYOPs) and to help counter foreign propaganda, the Defense Intelligence Agency (DIA) has developed a Human Factors Analysis Center, and has assembled a panel for perception management threat analysis.

SPACE

SPACE CONTROL

The ability of the United States to access and utilize space is a vital national security interest because many of the activities conducted in space are critical to its national security and economic well-being. Potential adversaries may target and attack U.S., allied, and commercial space assets during crisis or conflict as an asymmetric means to counter or reduce U.S. military operational effectiveness, intelligence capabilities, economic and societal posture, and national will. Therefore, ensuring the freedom of space and protecting U.S. national security interests in space are priorities for the Department.

The mission of space control is to ensure the freedom of action in space for the United States and its allies and, when directed, deny an adversary freedom of action in space. The space control mission area includes: the surveillance of space; the protection of U.S. and friendly space systems; the prevention of an adversary's ability to use space systems and services, the negation of adversary space systems and services; and supporting battle management, command, control, communications, and intelligence. As the foundation for space control, space surveillance has received increased emphasis over the past year. A modernization plan and investment strategy has been developed to update the aging infrastructure, enhance the command and control structure, and evolve the system from a cataloging and tracking capability to space situational awareness system capability. There are also a number of prevention and negation efforts underway to include a space control technology development program that will support theater-level force protection through the development of capabilities that will have temporary and reversible effects on systems used for purposes hostile to U.S. national security interests.

NAVIGATION

The Global Positioning System (GPS) continues to provide the military with global, all-weather, continuous navigation, positioning, and timing data. The dual-use nature of the system also provides an ever-growing civil, commercial, and scientific user community with similar capabilities.

One of the greatest success stories of space as a force multiplier is GPS. Planners utilize GPS data to locate targets, develop the best attack and strike routes, and then program the information into precision weapons. Many of these same weapons utilize GPS for in-flight navigation updates. The ability to strike targets more precisely and from a greater range places fewer U.S. and allied personnel and equipment in danger, thereby reducing casualties. It is no longer necessary to calculate operations by the number of missions required to attack a target but rather by the number of targets that can be struck on each mission. Soldiers, sailors, airmen, and Marines rely on GPS for location as it enables them to navigate through both featureless deserts and extremely mountainous terrain. GPS enables CSAR efforts to swiftly locate and extract personnel in danger.

The currently planned GPS modernization program will add new military signals (known as the M-code) to Block IIR and IIF satellites as well as additional civil signals. Currently planned timelines call for adding the M-code to the last 12 Block IIR satellites along with an additional civil signal. The first scheduled launch with these expanded capabilities is planned to occur in 2003.

The Block IIF satellites will incorporate the third civil signal to support civil safety of life applications. Corresponding improvements in the ground control supporting infrastructure will also be implemented. The first scheduled launch of the enhanced Block IIF satellites is in the 2005–2006 timeframe.

At the direction of the President, Selective Availability (SA) was set to zero on May 2, 2000. Civilian users of GPS now receive position, velocity, and time information with no accuracy degradation. Since SA was discontinued, horizontal position errors of less than 10 meters have routinely been observed. This accuracy represents a nearly 10-fold improvement over that available to civil users when SA was activated.

The discontinuation of Selective Availability will continue to fuel the explosive growth of civil GPS applications throughout the world. The President's decision to discontinue Selective Availability was based upon a recommendation by the Secretary of Defense in coordination with the Departments of State, Transportation, and Commerce, the Central Intelligence Agency, and other Executive Branch departments and agencies. The decision acknowledged that worldwide transportation safety, scientific, and commercial interests could best be served by discontinuation of SA and was supported by the DoD's demonstrated capability to develop and deploy systems designed to selectively deny GPS signals on a regional basis when U.S. national security is threatened.

Because of the high demand for airspace and GPS access from the public and commercial sectors, increasingly sophisticated navigational equipment is required to ensure safety of flight in many areas of the world and successful military operations. The Global Access, Navigation and Safety (GANS) program upgrades and modernizes DoD capabilities to maintain compatibility with the civil sector. GANS addresses a wide range of issues, including the use of GPS in war and peace, precision landing, and global air traffic management.

SPACE LAUNCH

The effective use of space for military purposes requires reliable and affordable access. Current U.S. space launch systems differ only slightly from the ballistic missiles developed during the 1950s and 1960s, and are increasingly costly to use. The National Space Transportation Policy balances the efforts to sustain and modernize existing launch capabilities with the need to invest in the development of new, improved space transportation systems. DoD is the lead agency for improving today's expendable launch vehicle (ELV) fleet, including the requisite technology development. Table 8-1 illustrates the Department's spacelift highlights.

Spacelift Operations ^{a,b}							Table 8-1
	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001 ^{c,d}
Titan IV		4	4	4	2	3	2
Titan II				1	1	2	1
Atlas	12	7	8	6	5	5	4
Delta	3	8	11	12	10	5	9
Shuttle	7	7	8	5	3	3	8
^a Government space launch operations for each expendable launch vehicle and DoD support to shuttle launches. ^b During normal operations, the Air Force spacelift call-up capability is 90 days for medium lift vehicles (Delta, Titan II, and Atlas) and 180+ days for heavy lift vehicles (Titan IV). For emergency operations, the operational requirement documents for launch vehicles specify an emergency call-up of 45 days for medium launch vehicles and 90 days for heavy lift vehicles. However, current capability for acceleration of heavy lift indicates a 150 day call-up is more realistic (the Evolved ELV will reduce this period). ^c Includes scheduled government space launches for each expendable launch vehicle and DoD support to shuttle launches. ^d The FY 2001 maximum launch range rates are estimated at 48 for Eastern Range and 44 for Western Range.							

The Department's objective is to reduce the launch costs while improving capability, reliability, operability, responsiveness, and safety. To achieve this objective, DoD initiated the Evolved ELV (EELV) program to replace current medium- and heavy-lift launch systems. Through this program, DoD is partnering with industry to satisfy both government and the international commercial market launch needs. EELV will reduce life-cycle costs, shorten launch timelines, and enable more DoD, civil, and commercial launches per year. The medium-lift and heavy-lift EELVs will have their first government flights in 2002 and 2003, with one and five scheduled launches, respectively.

The Department will cooperate with the National Aeronautics and Space Administration (NASA) in the development of technology, operational concepts, and flight demonstrations for the next generation of reusable launch vehicles that will replace the space shuttle.

SATELLITE CONTROL

Satellite control involves operations to deploy and sustain military systems in space. Table 8-2 summarizes the current number of on-orbit satellite systems and their primary missions. The Air Force Satellite Control Network (AFSCN) is the primary C2 support capability for DoD, the National Reconnaissance Office, civil, and allied space programs providing data processing, tracking, telemetry, satellite commanding, communications, and scheduling for over 100 satellites. The Naval Satellite Operations Center provides similar support for Navy satellite systems. The AFSCN global antenna network also provides unique launch/early orbit and anomaly resolution services. As a backup, Air Force Transportable Mission Ground Stations can provide mobile C2 capabilities for certain DoD satellites.

Table 8-2 Current On-Orbit Forces ^a				
Capability	Navigation	Communications ^b	Missile Warning ^c	Environmental
On-Orbit	28	14	N/A	5
^a Force levels shown are current as of December 8, 2000. ^b Only includes Department of the Air Force satellites. ^c Number of operational missile warning satellites is classified.				

The Department's future satellite operations architecture establishes clear vectors to migrate satellite control into an integrated and interoperable satellite control network. The Department is working closely with NASA and NOAA in developing a strategy to transition from current and planned systems into the future (20+ years). This strategy establishes timelines to improve satellite operations efficiency, consolidate and enhance the ground infrastructure, and develop new ground communications standards. Additionally, the Air Force Center for Research Support (CERES) provides a full-service commercial off-the-shelf (COTS)-based system for controlling research and development satellites. CERES also serves as a C2 testbed, allowing military satellite operators and commercial vendors to test new commercial ground systems using DoD satellites.

METEOROLOGICAL SATELLITE CONVERGENCE

The National Polar-orbiting Operational Environmental Satellite System (NPOESS) is a Presidentially-directed tri-agency program between the Department of Commerce's National Oceanic and Atmospheric Administration, the Department of Defense, and NASA. The program is funded 50/50 between the Department and DOC and managed by a tri-agency Integrated Program Office which is responsible for planning, developing, acquiring, managing, and launching NPOESS. NPOESS is a converged satellite system that will replace the two separate previously planned polar-orbiting follow-on programs of the USAF and NOAA respectively. The goal of NPOESS is to provide the most advanced, accurate, and dependable environmental data to the warfighter, and to the many civilian users of the system via a single national system, while achieving cost savings over the separate previously planned follow-on programs. The NPOESS program is working with the European Organisation for the Exploitation of Meteorological

Satellites to cooperate on data sharing and explore other opportunities for future cooperation. The Department is working closely with NOAA and NASA to ensure that NPOESS continues to satisfy national security requirements.

RESEARCH AND ANALYSIS

There is much that remains to be known about creating and leveraging information superiority. DoD initiated the Information Superiority Investment Strategy program to provide an analytical framework and a body of empirical evidence to support C4ISR-related Quadrennial Defense Review analyses. DoD's C4ISR Cooperative Research Program is dedicated to advancing both the state of the art and practice of command and control. The program focuses on highly leveraged projects designed to better understand and measure shared awareness and self-synchronization, to develop and assess new approaches to command and control, to design experimental processes needed to co-evolve information-enabled mission capability packages, and to understand the challenges associated with coalition command and control.

The Department is conducting an integrated set of analyses designed to contribute to the development of a coherent, balanced C4ISR investment strategy. Information Superiority Investment Strategy (ISIS) analyses will establish explicit linkages among mission shortfalls, investment options, mission effectiveness, and fiscal implications. As a continuing process, ISIS plans to analyze the full spectrum of DoD missions and address each of the information superiority domains—intelligence, surveillance, and reconnaissance; communications; command and control/battle management; information assurance; information operations; and information technology.

INFORMATION MANAGEMENT INITIATIVES

GOVERNANCE

In view of the critical role information and IT play in the successful accomplishment of the Department's mission, DoD maintains an Information Technology Management (ITM) strategic plan to ensure that DoD IT investments have a strategic and mission focus. The plan is a key part of an end-to-end strategic planning process designed to guide all DoD organization elements in performing their ITM strategic planning and implementation and to help them identify and defend resources to optimize mission performance.

The DoD Chief Information Officer (CIO) Executive Board serves as the management body and focuses on resolving issues, ratifying policies, and prioritizing IT budget proposals. Information management and IT policies are being updated around the achievement of information superiority to more directly link IT with the mission and to accommodate the fast pace of technological advancements and statutory requirements. Over the last year, policies have been issued in such areas as the Global Information Grid, information management, information assurance, networks, software licensing, and electronic business.

ELECTRONIC BUSINESS (EB)

Information superiority will be supported by revamped business processes enabled by EB and knowledge management technologies and program initiatives. Access to combat support information will be accelerated, timely, complete, accurate, and increasingly paperless. This will expedite and increase information access and improve the quality of decision making. The application of EB principles is

permitting the integration of Defense processes and evolution of a Defense enterprise capable of more fully supporting the warfighter.

KNOWLEDGE MANAGEMENT (KM)

KM is an emerging discipline that enables EB while focusing upon improving mission performance through strategic management of intellectual capital and knowledge resources. The emergence of supporting KM techniques and powerful web-based technologies for capturing, storing, retrieving, and sharing data and information and providing knowledge context, offers significant opportunities for achieving additional improvements in information superiority and the productivity of DoD EB processes. DoD is combining with EB to provide a critical synergy of complementary disciplines and technologies needed to achieve information superiority.

WORKFORCE MANAGEMENT AND TRAINING

Various initiatives are underway to attract, train, and retain a highly skilled workforce. These include programs that provide for scholarships for pursuit of education in shortage skill areas such as linguists and information technology. Within the DoD Intelligence Community there are civilian personnel initiatives that allow for higher salaries to attract and retain employees in critical skill categories where there are shortages.

Initiatives are underway to identify and track Information Assurance (IA) and IT professionals by definitive skill sets and ensure critical IA/IT management training is completed by individuals in key positions. Efforts are ongoing with other federal agencies on several projects ranging from updating Clinger-Cohen competencies to improving the processes for recruiting and hiring personnel, and allowing specialty pay for select IT skills in the Federal government.

The Information Resources Management College (IRMC) is the Department's flagship for information technology management training for senior managers, and offers a variety of information management courses. Its new Information Security/Assurance Certificate Program has been certified by the National Security Telecommunications and Information Systems Security (NSTISS) Committee as being compliant with the Information Systems Security Professionals standard, making IRMC one of only four schools in the Nation having this distinction. IRMC has been recognized as a National Center of Academic Excellence in Information Assurance, for meeting educational requirements of Presidential Decision Directive 63, "Critical Infrastructure Protection."

IT VISIBILITY AND OVERSIGHT

Section 8121 of the FY 2000 National Defense Appropriation Act for FY 2000 requires IT systems to be registered with and certified by the DoD CIO as to whether major automated information systems were in compliance with Clinger-Cohen Act requirements. Among other things, certification is based on analysis of alternatives, economic analysis, and performance measures, all of which relate to cost, risk, and return on investment.

The automated central registry, while proving useful in its own right, is being expanded to provide for a more integrated management view of DoD IT investments. DoD-wide concerns regarding information assurance, software acquisition oversight, global information grid, and enterprise software licensing will

all be addressed through future registration updates. In addition, DoD has issued policies and initiated a formal oversight and review process aimed at providing DoD personnel at all levels with timely information on the progress of major information system investments.

FAMILY OF SYSTEMS (FoS) MANAGEMENT

Recent statutory requirements, including the Clinger-Cohen Act, mandated that DoD implement a process whereby IT investments were managed and evaluated based on specific, measurable contributions to DoD mission goals and priorities. To achieve this, the Department is beginning to manage and oversee its IT investments from a mission perspective by establishing FoS and IT portfolios. Trade-offs among investments will be made to the optimum benefit of the mission and benefits will be measured and evaluated in the context of their contribution to the overall success of the mission.

SOFTWARE ACQUISITION, DISTRIBUTION, AND MANAGEMENT

Under the DoD Enterprise Software Initiative (ESI), DoD is using software best practices to develop a DoD-wide business process for distributing and managing commercial COTS software. This initiative is saving money by aggregating requirements and leveraging DoD's buying power to achieve the most favorable terms and pricing for commercially available software and maintenance. The Department continues to achieve savings of 28 percent to 98 percent of General Services Administration pricing. Over the past year, customer orders have increased dramatically.

Several initiatives are underway to improve the quality of software in the Department. First, the identification of a core set of performance measures that will uncover root causes of software problems. Second, the analysis of opportunities for re-engineering software processes. Third, the realization of the need to ensure the security of software applications, as evidenced by DoD's initiation of a pilot program to analyze and mitigate the threats to software.

RECORDS MANAGEMENT

Records management promotes the sharing of vital information across the Department by assuring the capture, integrity, and retrievability of the thousands of official records generated yearly by the DoD. The DoD standard is the only one of its kind and has been endorsed by the National Archives and Records Administration (NARA) for federal-wide use. The standard has also been utilized by local/state governments as well as by the Canadian and Australian governments and is being considered for presentation to the American National Standards Institute/International Standards Organization (ANSI/ISO) communities for endorsement.

ACCOMPLISHMENTS

During the past year, many advances were achieved in furthering information superiority capabilities in the plans, policy, and programmatic areas. Through increased emphasis on leveraging the Planning, Programming, and Budgeting System much needed resources were obtained for programs critical to the success of the information superiority vision and, as a result, was able to increase funding for a number of

critical programs. These accomplishments will help lay the foundation of a secure, interoperable infostructure with the addition of funds to:

- Implement a public key infrastructure.
- Expand defensive information operations.
- Establish a joint interoperability test and standards program.
- Expand the Joint Task Force—Computer Network Defense and develop a comprehensive approach to computer network defense.
- Build and protect the DoD infostructure.
- Complete the Global Positioning System.
- Ensure adequate intelligence support to the fused operations-intelligence common operational picture.
- Improve Electronic Intelligence capabilities.
- Build and maintain a SIAP capability.
- Increase future battlespace awareness by initiating the acquisition of Global Hawk and improved SIGINT capabilities.
- Enhance tactical imagery and provide a quick reaction capability.
- Initiate an end-to-end system of sensor tasking, information processing, exploitation, and dissemination of intelligence.
- Improve C4ISR support to Kosovo operations.
- Initiate a Capital Equipment Replacement Program to provide a significant increase in intelligence capability through state-of-the-art infrastructure across the security spectrum.
- Initiate a Measurement and Signature Intelligence (MASINT) Advanced Concept Program at four Joint Reserve Intelligence Centers.
- Ensure CINC warfighters' continued access to secure, adequate-capacity, up-to-date technology satellite communication systems that make efficient use of scarce spectrum resources.

CONCLUSION

Much progress has been made in reaping the rewards of advancing information technology. There is convincing evidence of the enormous potential of information superiority-enabled Network Centric Warfare and supporting network-centric operations. Yet, much remains to be done. Major challenges continue in the areas of interoperability, information assurance, and the achievement of a coherent infostructure to support DoD's twin revolutions—the Revolution in Military Affairs and the Revolution in Business Affairs.

CHAPTER 9

TOTAL FORCE INTEGRATION

During the Cold War, National Guard and Reserve forces numbered over one million personnel but contributed support to the Active Forces at a rate of fewer than one million man-days per year. To serve in the reserve components during that period meant being kept ready in reserve, waiting for the advent of World War III and the cataclysmic contingency that would call them to duty on the front lines in the fight against communism in Europe or Asia.

As the Cold War concluded, there was a need for a new national military strategy and a restructured military force. In embracing this new strategy for a new century, America's National Guard and Reserve are moving to the forefront of efforts to secure peace, engender democracy, and nurture market economies on a global scale. Today's 866,000 reserve component forces provide roughly 13 million man-days of support per year, a stark contrast to the Cold War years' contribution.

THE TOTAL FORCE IN A CHANGING WORLD

Effective integration within the Total Force means that leadership at all levels has well-justified confidence that reserve component (RC) units are trained and equipped to serve as an effective part of the joint, combined, and when required, multinational force within established timelines set for them in both peace and war. The nation's global interests require evolution and systematic improvement in Total Force Integration to provide the National Command Authorities with the flexibility and interoperability necessary for the full range of military operations. Achieving this will involve continued innovation in RC employment, supported by redoubled efforts toward benefit parity for RC members, to ensure that benefits and policies for military service are commensurate with levels of sacrifice.

Substantial progress has been made to integrate both Active and Reserve forces. This progress is evident in the increasing levels of participation by RC personnel in Department of Defense missions, both domestic and abroad. This thirteen-fold increase in RC support is the equivalent of adding 35,000 personnel to active component (AC) end-strength, or more simply put, the additional availability of two Army divisions.

These stunning results have occurred within the context of much broader change in the ways and places in which military forces—particularly the reserve components—have been deployed in recent years. For the first time in history, reservists are being called to active duty under three separate Presidential Reserve Call-Ups, in Bosnia, Kosovo and Southwest Asia. In Bosnia, over 20,000 reservists have been called involuntarily since 1995, with another 15,000 having served in a voluntary capacity. For Southwest Asia, 2,500 have been called and some 12,000 have volunteered. For Kosovo, more than 7,000 have been called involuntarily, and more than 4,000 volunteers have joined them. Reservists have been called-up two other times this decade for Operation Desert Shield and Desert Storm in Southwest Asia and Operation Restore Democracy in Haiti, with 265,000 and 8,000 reservists serving respectively.

These numbers indicate the nation cannot undertake sustained operations anywhere in the world today without calling on reserve assets. The reliance on reservists for the recent air operations over Kosovo, as well as the ensuing peace enforcement operations on the ground, show not only that the reserve components are participating, but also that the Total Force is thriving as a result of guard and reserve participation. Thus, progress is evident in terms of increased use and increased participation of the RC.

THE IMPERATIVE FOR CONTINUED TOTAL FORCE INTEGRATION

The creation of a seamless Total Force has profound implications for RC accessibility, for quality of life issues, and for the rate at which personnel are used (PERSTEMPO), as well as the number and frequency of operations that they are being called upon to perform (OPTEMPO). RC personnel are being used more often, more widely, and for a broader range of missions and operations than ever before. For this progress to continue, the Department must endeavor to remove the remaining structural and cultural barriers to integration and ensure that reservist accessibility is both recognized and faithfully considered so that increasing real-world military employment does not become a disincentive for reserve affiliation.

TOTAL FORCE TRANSFORMATION

Within the Army, the Selected Reserve elements of the Army National Guard and Army Reserve comprise 54 percent of the force. Their units provide essential combat, combat support, and combat service support to the Army. Their contributions are particularly important in high-demand, low-density (HD/LD) units. For example, by percentage of the Army, the RC provides the following capabilities: public affairs (82 percent), civil affairs (97 percent), medical brigades (85 percent), psychological operations units (81 percent), engineering battalions (70 percent), and military police battalions (66 percent). The Army is doing more than taking advantage of the unique capabilities inherent in its guard and reserve. It is assigning wholesale missions to them. In March 2000, the Texas National Guard's 49th Armored Division (AD) took command of the multinational Bosnian peacekeeping effort. The almost 700 soldiers of the 49th AD completed a six-month deployment to Bosnia, thus freeing an Active division to concentrate on training for their wartime mission during that period. When the 29th Infantry Division from Virginia takes over the American sector in Bosnia in 2001, the majority of American troops will be reservists. In addition, eight Army National Guard enhanced separate brigades will send companies to form battalion-level task forces for future rotations of the Stabilization Force. These planned deployments send a clear signal about the Department's increased reliance on, and trust in its reserve components. From now on, the men and women of the armed forces—guard, reserve, and active—will work more closely together as an integrated force. In addition, the Army created two integrated divisions in October 1999, with six Army National Guard enhanced Separate Brigades under active component leadership. This configuration leverages the senior level command of the active component with the part-time service of professionals in the reserve component.

The Navy is also making significant progress in building a seamless force. Naval Reserve units are an integral part of many mission areas of the Navy, including fleet logistics, maritime patrol, carrier and helicopter wings, mobile construction forces, intelligence units, surface combatants, explosive ordnance disposal, undersea warfare units, operational and administrative staffs, special warfare, and medical support units. For example, by percentage of the Navy, Naval Reserve contributions include mobile

inshore undersea warfare units (100 percent), logistics support squadrons (100 percent), Tactical Aviation Adversary (100 percent), cargo handling battalions (93 percent), mobile construction battalions (60 percent), and fleet hospitals (40 percent). Naval reservists make up about 50 percent of the Navy's mine countermeasure forces, with 16 mine warfare ships, including the Navy's only Mine Control Ship, USS Inchon. The Selected Reserve part of the Naval Reserve comprises 16 percent of the Navy. More and more reserve flag officers are performing extended active duty, and their assignments indicate increased reliance on reserve leaders. Naval reservists provided 80 percent of the overall Naval individual augmentation force in support of the Bosnia and Kosovo operations, and Naval Reserve units are being relied upon to complete increasing portions of counterdrug operations. Naval Reserve aircraft squadrons perform 25 percent of that mission while Naval Reserve ships accomplish some 30 percent.

The Marine Corps' Total Force approach reflects its imperative to maintain a high state of readiness for war or national emergency. All enlisted personnel and officers, active and reserve, train to a common standard, and they have the same organizational structures staffed by Marines trained to the same individual and unit training standards. Reserve units can be used in addition to, or instead of, the Active Force, either for OPTEMPO relief or for tackling a mission head-on. Thus, within the Marine Corps, advancements toward integration are not fundamental shifts but rather refinements to an ongoing and highly successful process of utilizing reservists. The Corps has embraced a simple concept with a clear intent: Reservists are a major part of the Marine Corps warfighting and expeditionary forces, and the Corps is already set up to take advantage of reserve strengths across the board. The Marine Corps Reserve includes a division, an air wing, and a force service support group. The Marine Forces Reserve Headquarters in New Orleans provides peacetime command, control, and resource allocation for the Marine Corps Reserve. The active and reserve components are closely integrated through horizontal fielding of equipment, weaponry, technology, and training. Marine Corps Reserve contributions to the Marine Corps, by percentage, include civil affairs (100 percent), artillery battalions (33 percent), tank battalions (50 percent), supply battalions (25 percent), and light attack helicopter squadrons (25 percent). The Selected Reserve part of the Marine Corps Reserve constitutes about 19 percent of the Marine Corps.

Since 1995, the Coast Guard has embraced a vision of integration that has essentially done away with the traditional reserve structure within its force, moving instead to one in which the Coast Guard Reserve has evolved into a force largely comprised of Individual Mobilization Augmentees. Today, more than 80 percent of all reservists are assigned to and work directly for active component units and assist in the performance of virtually all Coast Guard missions. They meet the same professional qualification standards as their active duty counterparts, attend the same formal schools and perform the same on-the-job training. Force Integration has helped active duty Coast Guard field commanders better perform their missions by leveraging the valuable and often unique professional skills of reservists, from environmental protection to law enforcement, from search and rescue to port safety. The Coast Guard Reserve augments the Coast Guard in most operational mission areas and provides specialized port security elements (some 97 percent of the total Coast Guard capability) and pollution response strike teams.

The Air Force is adapting to the changing missions of today in preparation for the challenges of tomorrow by implementing a new planning and scheduling concept for employment of forces utilizing Aerospace Expeditionary Forces or AEFs. This concept responds to the increasing number of contingencies that call for worldwide deployments; it attempts to inject predictability into the scheduling of Air Force units and personnel. The AEFs require full integration of all the air components into cohesive deployable force

packages. These forces can be tailored to meet CINC requirements. Part of that tailoring involves the routine employment of associated guard and reserve units and personnel on a day-to-day basis. The goal is to balance OPTEMPO across the force, and enhance readiness. The AEF also offers reservists and their civilian employers more predictability and stability with respect to the timing and duration of deployments. The overall mission remains the same—to provide rapid and decisive global air power when and where needed.

The Air National Guard and Air Force Reserve perform a broad range of combat and combat support missions, including counter air, interdiction, close air support, strategic and tactical airlift, aerial refueling, space operations, force protection, aeromedical evacuation, weather reconnaissance, combat search and rescue (CSAR), and special operations. Air National Guard and Air Force Reserve contributions, by percentage of the total Air Force inventory, include strategic interceptor force (100 percent), tactical airlift (71 percent), weather reconnaissance (100 percent), aerial refueling and strategic tankers (67 percent), CSAR (54 percent), tactical air support (38 percent), strategic airlift (62 percent) and special operations (17 percent). The Selected Reserve elements of the Air National Guard and Air Force Reserve comprise 33 percent of the Air Force.

RESERVE COMPONENT MANPOWER AND PERSONNEL PROGRAMS

RESERVE PERSONNEL IN SUPPORT OF THE TOTAL FORCE

While the role of the reserve components in the Total Force has expanded dramatically over the past decade, the size of the reserve component has declined by 26 percent. By FY 2001, Selected Reserve end-strengths will nearly achieve the drawdown levels, resulting in a Selected Reserve force of around 866,000 personnel. Simultaneously, funding to support that force has been reduced proportionately. Funding for the reserve components is about 8.4 percent of the total Defense budget. These characteristics of the reserve components—size, funding, and support to defense missions—are projected to remain stable over the next several years. However, readiness and enlistment rates have generally displayed negative trends over the past two years. These trends must be carefully monitored and proactive measures must be taken to curtail any downward movement, to include determining full-time manning necessary to achieve and maintain appropriate readiness levels. Additionally, increased reliance on reservists raises some concerns about the relationship between reserve component members and their civilian employers.

The Individual Ready Reserve (IRR), which is a manpower pool of trained Service members, is also shrinking. By FY 2001, the IRR will have shrunk by over 51 percent from the FY 1993 level, to approximately 375,000. Since the IRR does not have an authorized strength level like the Selected Reserve, its end-strength is a residual manpower pool consisting primarily of members separating from active duty or transferring from the Selected Reserve. More reliance on the reserve components also means increased reliance on the IRR. This will require sound management and adequate resourcing of the IRR, as well as providing IRR members with appropriate training opportunities.

RESERVE MEDICAL READINESS

Health care continues to be a significant concern for reservists and their families. Guardsmen and reservists want assurance that if injury or illness occurs while performing military service, they will

receive medical and dental care. Likewise they want their families to have access to health care while the Service member is incapacitated. Secretary Cohen recently signed and sent to Congress the results of a comprehensive Department study on the means of improving medical and dental care for reservists. The study was conducted in conjunction with the first-ever Reserve Component Health Care Summit—part of Secretary Cohen's commitment to building a seamless Total Force. Both the Health Study and the Health Summit were part of an effort to reassess the universe of reserve component health care issues. At the core of this effort was the premise that it is the performance of duty, not the length of duty that establishes risk and exposure to harm. In other words, injury or illness that occurs in the line of duty must be treated, regardless of the duty status in which the individual was serving when the injury took place.

Several initiatives have been implemented:

- The authority to order a reserve component member to active duty, voluntarily, for treatment of an injury, illness or disease incurred or aggravated in the line of duty while performing inactive-duty training;
- Extending a member on active duty while being treated for an injury, illness or disease incurred or aggravated during a period of active duty for 30 days or less; and
- The member's family members are authorized care under the TRICARE Standard or Extra Programs on more than 30-day orders or they are authorized care on the same basis as the family members of an active duty member when on orders for more than 179 days.

The Secretary may now order a member to active duty to receive authorized medical care, to be medically evaluated for disability, or to complete a required DoD health care study. The Department now has the authority to waive the TRICARE deductible for dependents of reservists supporting contingency operations. Expansion of dental program benefits to reserve members and their dependents will now be the same as those provided to dependents of active duty members. Reservists may now qualify for retirement, based on 15 years of reserve service for a disability that is not service-connected. These changes recognize a reservist's career commitment to serve on a part-time basis.

Despite great strides, additional challenges remain. One of the most difficult choices reserve families must make when the member is ordered to active duty is which health care system to use. While the law allows for continuing health care under a civilian employer, the cost to reserve members may become prohibitive. Alternatively, choosing a military health care system may require a change in health care provider. Continuity of care is an important quality of life issue and the Department is now focusing efforts on providing reserve families with affordable options.

JOINT/INTEGRATED FAMILY SUPPORT

Total Force Family Readiness is a critical issue for the Department of Defense. Quality of life and family matters are priority issues for the Secretary and the Services. The National Guard and Reserve components have worked closely with their parent Services to develop seamless, integrated family readiness and support programs that provide information and services to all members—active, guard or reserve. To enhance support for guard and reserve families and maintain a Total Force approach to family readiness, the Office of the Assistant Secretary of Defense for Reserve Affairs and the DoD Office of Family Policy

formed a strategic partnership. The results of this partnership cemented the Department's commitment to eliminate all barriers to providing quality family support programs across the force. This partnership will continue to nurture the philosophy and reinforce the practices of working together to share information and resources to better prepare and support military families.

The first product of the partnership was a *Guide to Reserve Family Member Benefits*, designed to educate families on benefits and entitlements, available resources, and agencies that can render assistance in times of need. This guide was mass produced and made available through the Internet to maximize accessibility. The *National Guard and Reserve Strategic Family Readiness Plan: 2000–2005* was also published and is currently being implemented. The plan establishes a strategic direction for reserve family readiness in the new millennium and emphasizes the direct link between family readiness and unit readiness.

The partnership also resulted in the guard and reserve community playing a significant role in the very successful DoD Family Readiness Conference 2000, which Secretary Cohen hosted. More than 800 participants from all services and components came to realize the strengths and advantages of working together as a Total Force team in supporting families. Also in support of family readiness, two web-based applications are currently under development. The first is the *Family Readiness Master Training Calendar* that displays training opportunities, workshops, and conferences conducted by all services and components that support family readiness. The second is the *Family Readiness Tool Kit* that assists leaders at all levels to provide information to their members and families.

In late summer 2000, 75,000 reserve component members and 43,000 spouses were asked to complete surveys on a wide range of programs, policies, and issues affecting their quality of life. It was the first such survey in eight years. Results will provide a comprehensive look at morale, civilian work, economic, training, benefit, and other issues. DoD officials recognize that without family readiness there is no unit readiness because families are inexorably entwined with the men and women who serve America. Reserve component personnel must make a full-time commitment to a part-time career, have to be ready and willing to deploy, and their employers and families have to be ready and willing to let them go. Reserve call-ups create tremendous hardships and challenges. The Department greatly appreciates the support shown by families and employers.

CREATING COMPENSATION EQUITY

Historically, differences between AC and RC compensation and benefits have reflected the differences between individuals who have chosen to serve full-time in the military and those who have made a full-time commitment to military service but perform military duties on a part-time basis. While many benefits are and should be automatic entitlements, the eligibility for and the level of other benefits must consider the military value of the member to the Service. Greater reliance has been placed on RC members and units to accomplish military missions and operations. In addition, smaller force levels, constrained budgets, and less overseas presence have led to a significant shift in the way reservists are used, calling into question the validity of certain differences in compensation and benefits. In his Total Force Policy memorandum of September 4, 1997, Secretary Cohen acknowledged this shift by calling on all DoD leaders "...to create an environment that eliminates all residual barriers—structural and cultural—for effective integration within the Total Force."

Recent initiatives will ensure equity of benefits and entitlements for guard and reserve members. RC members will be eligible to participate in the recently authorized Thrift Savings Program for military members. RC members will qualify for the Mass Transit Subsidy Benefits. Other initiatives include: The Ninth Quadrennial Review of Military Compensation studying the impact of possible changes to the reservists' retirement system, modifying the basic principle for paying many Reserve special and incentive pays, eliminating differences in the Basic Allowance for Housing for RC members who serve on active duty fewer than 140 days compared to those who serve on active duty for 140 days or more, and removing other pay and benefit disparities thus to eliminate barriers to integration.

INTEGRATING SYSTEMS TO SUPPORT THE TOTAL FORCE

The National Guard and Reserve component are full partners in the Department's ongoing modernization effort to replace aging systems and incorporate cutting-edge technologies within the Total Force. Current projects are underway in the areas of personnel, pay, manpower, and training. The Revolution in Business Affairs concept is being used as the Department reengineers its business practices, leverages commercial technology, employs data standards and open systems, and integrates processes and products.

To effectively execute missions and operations, the seamless exchange of information and data from a wide variety of sources is critical. Accurate and timely exchange of data and information can adversely impact operations, retention, and overall morale. With increasing emphasis on joint operations, combatant commands want access to accurate and timely personnel data. Other senior leaders and joint managers need more standardized data in order to make requirement comparisons between Services and employ all available personnel resources more effectively. Tracking reservists called to active duty in support of contingencies and tracking active and reserve personnel within the operational theater have often not been effective. Integration information systems, such as the Defense Integrated Military Human Resource System and the Joint Personnel Asset Visibility module of the Joint Total Asset Visibility System, are key to solving many of these problems.

RESERVE COMPONENT READINESS, TRAINING, AND MOBILIZATION PROGRAMS

ACCESSIBILITY

To ensure the RCs remain integral to the Total Force in the 21st century, the Department is exploring ways to improve accessibility. By simply adding predictability to RC usage, accessibility improves. The Air Expeditionary Force put in place by the Air Force in 2000 provides upwards of a year's warning to a reservist that they may be called to active duty. As the Department uses National Guard divisions in Bosnia, the lead time for some Army call-ups has increased to over two years. This provides for improved employee/employer relations and gives families plenty of time to prepare for a separation.

Technology is improving accessibility. In particular, the Department is examining the feasibility of using members of the Selected Reserve to provide joint support through virtual methods. These methods capitalize upon the accessibility of technological innovations to provide production from distributed sites, quite possibly even reservists' homes. The Department is rewriting policies to provide additional flexibility in the use of training time and options for scheduling training to support the Total Force.

While the Department continues to expand accessibility to reservists, it is mindful of the dual role of reservists. Utilization of the RC requires appropriately balancing the nation's ongoing requirements with individual reservists' non-military career demands. The Department's utilization of reserve component members must acknowledge their full-range of voluntary and involuntary military participation. This participation includes: regular or additional drills, annual training, special training, additional temporary training periods, and recall to active duty. These cumulative periods of participation, to include the associated time traveling away from their homes, families and jobs, must be balanced. Reserve component members must be available to participate in real-world operational missions and relevant training opportunities. Ultimately, however, the demands of RC members' lives and responsibilities form the upper limit of their availability.

READINESS

As DoD continues to pursue full integration of the AC and RC into the Total Force, it becomes ever more important that the RC along with the AC, report the readiness of the force in accurate and full detail. The proportion of the RC reported and the level of detail is improving, although full and comprehensive readiness reporting of the RC remains a goal yet to be achieved. To date, there have been some concrete steps in achieving this goal. A monthly readiness report to Congress includes the status of the major combatant commands within the RC using the data reported in the Global Status of Resources and Training System (GSORTS). The GSORTS report has been helpful in shoring up the deficiencies in RC readiness visibility. RC readiness reporting in the Joint Monthly Readiness Review (JMRR) has also improved. The JMRR, using reports from the CINCs and Services, is the principal tool used by the Joint Staff to review the U.S. armed forces' readiness to execute the National Military Strategy. Timely and comprehensive AC and RC readiness reporting, through the CINCs and Services, helps ensure that the Department can accurately assess the Total Force's readiness to execute its assigned missions.

In response to congressional direction to create new approaches to readiness training in the United States, the Department implemented the Innovative Readiness Training (IRT) program. Similar to overseas exercise deployments, IRT training relates directly to a unit or individual Mission Essential Task Listing, but training is conducted within the United States, its territories, and possessions. This affords guard and reserve personnel the opportunity to train in the communities where they live, directly enhancing recruiting and retention. Several ongoing annual projects for Native American and Alaskan Indians in Alaska, North and South Dakota, Montana, New Mexico and Arizona specifically address medical and dental health services, road and house construction, and well drilling. Units conduct hundreds of projects each year in over 40 states and the District of Columbia.

TRAINING TECHNOLOGIES—ADVANCED DISTRIBUTED LEARNING

An excellent example of training technology tailored to the needs of the National Guard and Reserve component is DoD's Advanced Distributed Learning (ADL) initiative. ADL is a collaborative effort with industry and academia to expedite production of learning materials and tools that are reusable, can run on a broad range of hardware platforms, and can be accessed and modified over a communications network. The National Guard has a major ADL initiative to extend education and training resources across the local, state, and federal communities. RC ADL integration has been seamless in the Services' planning and strategy phases to date. Each Service's Distributed or Advanced Distributed Learning plan/roadmap takes into account the needs of their respective RC.

The use of simulators and simulations as a training tool is not new to the RC. Simulation evolution over the years has provided training opportunities to reservists located at distant sites. The RCs use simulations and training devices across the three established DoD simulation categories: live, virtual, and constructive. The RCs also continue to optimize the use of AC simulations and training devices when appropriate.

Reserve components plan to increase use of simulation, embedded training, and distributed learning technologies to train Total Force reservists. Expansion of these technologies is essential to achieving planned improvements in force integration and readiness. Distributed learning technologies have the potential to make training more cost-effective and available to the active and reserve communities. The Department is actively pursuing the full spectrum of distributed learning media, fully interoperable with existing DoD and government systems, which will improve training readiness throughout the Department.

JOINT RESERVE INTELLIGENCE PROGRAM

The Joint Reserve Intelligence Program (JRIP) leverages the pre-paid training days of approximately 20,000 intelligence reservists in direct support of force-wide intelligence requirements. In FY 2000, the JRIP allocated approximately 41,500 man-days to CINCs, combat support agencies, and the Services in direct support of current intelligence requirements. The JRIP expects to execute approximately 50,000 man-days in FY 2001. The JRIP enhances individual and unit wartime readiness training by providing intelligence reservists the opportunity to do in peacetime what they do in wartime. Moreover, these reservists frequently bring unique mixes of civilian and military skills, capabilities, and networks to the operational environment that may be particularly useful, but not otherwise available to the defense community. Congressional legislation now permits joint and unified commands, combat support agencies, and the Services to transfer Operation and Maintenance funds directly to the reserve components in support of additional workdays to meet unexpected intelligence requirements. As a result, many of DoD's 20,000 intelligence reservists now provide critical and unique support to current operational requirements.

RC ROLE IN INTERNATIONAL AFFAIRS

The Partnership for Peace and State Partnership Programs seek to capitalize on the unique role of citizen soldiers to establish genuine partnerships and long-term functional relationships that go well beyond their military contributions. Under the direction of the National Guard, RC personnel work with the US Ambassador in support of the Country Plan in those countries participating in the program. Working with the theater CINC, these efforts are important facets of each Theater Engagement Plan's support of the National Military Strategy. Each year hundreds of RC personnel are engaged in this endeavor and through their work and associations they leverage both their community and state resources in order to engage their foreign partners. While shaping the international environment, the Guard builds on what it does best in its federal and state missions, and often offers military assistance to civil authorities, such as disaster relief assistance/operations, bringing the concept of the military and civilians working together into a new and tangible reality.

RC ROLE IN INFORMATION OPERATIONS

Information Operations (IO) is emerging as a broad area discipline that is well suited to integration of RC capability, especially information technology skills acquired by individual members in their civilian professions. Reserve component members are often on pace with commercial advances in computer networks because of their civil sector employment, trained by their workplaces to exploit technology.

There are many examples of RC personnel who are integrated into IO activities. These programs cover a wide spectrum of activity and include: the Land Information Warfare Activity at Ft. Belvoir, VA; Vulnerability Assessment Teams; Field Support Teams; Computer Emergency Response Teams; Higher Headquarters support teams; Fleet Information Warfare Center; Naval Information Warfare Activity; Navy Computer Incident Response Team; Naval Web Risk Assessment Cell; and Naval Security Group Activities.

The RCs are also being integrated into joint information operations. The Defense Information Systems Agency (DISA) utilizes 173 reserve personnel in its information assurance activities. This includes a newly established reserve initiative known as the Joint Web Risk Analysis Cell (JWRAC). The JWRAC analyzes content and data on publicly accessible DoD web sites looking for both individual security risk issues and data aggregation security concerns. The JWRAC has been extremely successful in identifying and reporting numerous information security risks.

National Security Agency (NSA) also utilizes reserve support in its information assurance activities and recently established a Regional Cryptologic Monitoring Center-Reserve (RCMC-R). This entirely reserve staffed RCMC-R supplements NSA communications security (COMSEC) monitoring activities.

A new concept study, known as the Joint Reserve Component Virtual Information Operations Organization (JRVIO), calls for the establishment of reserve support for the newest joint organizations with IO missions, such as the Joint Information Operations Center, the Information Operations Technology Center, and Joint Task Force—Computer Network Defense. It also calls for the expansion of reserve support to the information assurance missions at DISA and NSA. One essential element of JRVIO calls for the use of virtual technologies to maximize the utilization of both the military and civilian acquired skills extant in the RC.

THE RESERVE COMPONENT EMPLOYMENT 2005 (RCE-05) STUDY

RCE-05 reviewed the employment of the RC and developed recommendations to enhance the role of the RC in the full spectrum of military missions. The study examined the role of the RC within the context of three overarching themes: homeland defense, smaller-scale contingencies (SSCs) and major theater wars (MTWs). The study recommended a number of follow-on actions to examine in detail many of the areas that the original study lacked the time or resources to analyze in depth.

HOMELAND DEFENSE

The study developed alternative concepts for employing RC forces in support to Weapons of Mass Destruction-Consequence Management (WMD-CM) in the newly formed Joint Task Force—Civil Support and in the emerging area of information operations. The study also confirmed that the RC could do more in the counterdrug area if additional funding was provided. The report ensured that RC participation would continue to be addressed in program decisions concerning National Missile Defense. Furthermore, future planning discussions will benefit from the follow-on studies providing important analyses in the Homeland Security arena. (Both Homeland Defense and Homeland Security are RCE-05 terms that are yet to be defined and included in *Joint Publication 1-02*.)

SMALLER-SCALE CONTINGENCIES (SSCs)

The study developed alternative concepts for employing RC forces for smaller-scale contingencies. The Air Force created the first-ever Air National Guard associate units to reduce OPTEMPO in Low Density/High Demand surveillance assets. The Marine Corps performed a review of its Individual Mobilization Augmentee (IMA) program to increase the level of RC augmentation to deploying units and headquarters. The Army determined that it is feasible to use RC forces in peacekeeping and expects to have another Army National Guard light infantry battalion accomplish a six-month rotation in the Sinai Peninsula in the future.

MAJOR THEATER WAR (MTW)

The study developed alternative concepts for employing RC forces in future MTW scenarios. Several reports provided groundbreaking analysis on the use of Army National Guard (ARNG) combat divisions. The Army provided the first-ever look at the potential availability of additional post-mobilization training sites with appropriate size, configuration, and ranges to meet all critical criteria to serve as a warfighting center and estimated the resources required. The Army Division Availability Study determined that an MTW apportioned ARNG division, with adequate pre-mobilization enhancements, and a dedicated post mobilization training structure can be trained in about 150 days from unit mobilization. As a result of RCE-05 efforts to examine the Joint Strategic Capabilities Plan (JSCP) process, as it relates to the ARNG divisions, the Army has recommended the apportionment of ARNG divisions in support of the warfighting CINCs. The change to the JSCP will be signed in 2001 and will contain six of the eight ARNG divisions. This landmark study also developed the first DoD definition of a Strategic Reserve. The Strategic Reserve consists of those military forces specifically identified to mitigate strategic risk and provide additional flexibility to the National Command Authorities (NCA). The primary purpose of the Strategic Reserve is to provide the NCA with forces capable of ensuring success in MTWs that prove to be more demanding or prolonged than anticipated. In the event of MTW, this Strategic Reserve could also be employed at the discretion of the NCA in a secondary role of backfilling those forces withdrawn from, substituting for forces committed to, or providing a capability to conduct selected contingency operations in support of US vital interests. Forces in a Strategic Reserve could also be utilized to augment the specialized forces committed to homeland defense, to assist with tasks not requiring additional specialized capabilities.

An especially important aspect of RCE-05 is the spirit of AC and RC cooperation that is being carried forward into follow-on studies, thus maximizing the value of study conclusions and recommendations. The level of understanding and cooperation that resulted from the process is a major success story of the RCE-05 effort and will pay continuing dividends in future AC/RC discussions. The study is one step in an ongoing and rigorous process of identifying new and better ways of using the RC. Both the study and the resultant recommendations will significantly enhance the department's ability to respond to a wide range of missions well into this century. In examining the role of the reserve components in the future, the study focused on three core areas as mentioned. In each area, the study reviewed several different initiatives, and for each one either recommended a near- or mid-term action, or determined that the particular initiative did not merit implementation in the foreseeable future.

RESERVE COMPONENT FACILITIES

Joint use of facilities, consolidating reserve units, and co-locating units on existing military installations continue to be major initiatives in meeting RC facilities requirements. Recent congressional reporting requirements and changes to the financial management regulations require the Services to review their military construction programs for joint use potential. The result is a closer coordination between the AC and RC on facility requirements. The Department and the Services are developing processes that ensure timely review of all military construction projects regardless of fiscal year. Once fully implemented, these processes will enable DoD and the Services to more effectively plan, program, and budget for joint use projects across the FYDP.

Even before the congressional language and Department regulatory changes, the RCs led the way in joint use construction initiatives among the Services. Seven joint use projects were funded in the FY 2001 program. These include four Armed Forces Reserve Centers, a Consolidated Naval and Marine Corps Reserve Center, a Joint Air National Guard and Active Air Force Munitions Maintenance and Storage Complex and a Medical Training Facility partnered with the Department of Veterans Affairs.

The benefits of joint use go beyond economics. When units live and work together, they develop a new appreciation for each other's capabilities, unique cultures, and their supply, maintenance and training systems. These experiences help to break down cultural barriers and facilitate Total Force Integration. Providing strong support for the Department's emphasis on joint use facilities, the RC's many successes with joint use have served as the test bed for the active, guard, and reserve components to recognize the benefits awaiting all components through joint use of facilities. The Department's ability to provide needed facilities in the future partly depends on how well joint use opportunities are developed and implemented.

RESERVE COMPONENT EQUIPMENT

Reserve forces are vital to the Total Force as they provide significant support for operational missions and additional combat power. Success for America requires an integrated Total Force. The RCs receive their equipment from two primary sources—new acquisitions and redistribution from the AC inventories. In FY 2001, the Services plan to procure \$1.6 billion in new equipment for their reserves. This continues the recent trend of increasing new equipment procurements for the RCs as equipment redistribution declines.

In addition to the Service procurements, Congress traditionally adds funds for guard and reserve equipment in the form of a separate guard and reserve equipment appropriation, as well as additions to AC procurement accounts for reserve equipment. For example, in FY 2001 Congress added \$100 million in National Guard and Reserve component equipment appropriations and nearly a billion dollars in specific adds to active accounts.

The Department sponsored a study on the impact that equipment differences have on RC mission capability. This study revealed that the primary RC equipment issues were not incompatibilities but capabilities. Much of the RC equipment is obsolete, aging, and maintenance-intensive and this may limit RC ability to participate in CINC planning. This information helps focus the Department toward addressing specific areas in the future.

NATIONAL COMMITTEE FOR EMPLOYER SUPPORT OF THE GUARD AND RESERVE

The civilian side of reserve service must remain in focus. One of the major limitations is that reservists have civilian careers to pursue and civilian employers to whom they must answer. Because the nation continues to rely more and more on reservists, it is vital that the Department takes steps to minimize disruptions that affect employers and keep them engaged and informed.

The National Committee for Employer Support of the Guard and Reserve (ESGR) is an agency within the Office of the Assistant Secretary of Defense for Reserve Affairs. Today ESGR operates through a network of more than 4,500 volunteers throughout 54 committees located in each state, the District of Columbia, Guam, Puerto Rico and the Virgin Islands. The Department of Defense tasks ESGR to "...promote both public and private understanding of the National Guard and Reserve in order to gain US employer and community support through programs and personnel policies and practices that shall encourage employee and citizen participation in National Guard and Reserve programs." By explaining the missions of the National Guard and Reserve components and by increasing public awareness of the role of the employer, they develop a dialogue among employers, the ESGR Committees, and local guard and reserve unit commanders and members. The success of the nation's defense is dependent on the availability of highly trained members of the Total Force. The Committee's mission is to obtain employer and community support to ensure the availability and readiness of reserve components, an important milestone on the road to Total Force Integration.

CHALLENGES TO CONTINUED TOTAL FORCE INTEGRATION

As the nation continues to rely on the RC to meet the national military requirements with available forces, the laws, policies, systems, structures, and processes must support a Total Force approach. The Department must simplify the ability to employ the RC when and where they are needed and continue to ensure that appropriate quality of life programs are in place to recruit and retain capable RC forces while working together to address employers' concerns and providing responsive family support programs. The Department also must provide commanders with the personnel, readiness, training, equipment, construction, and maintenance resources necessary to ensure the flexibility and interoperability needed for joint and combined operations.

Efforts have come a long way toward achieving a fully integrated force, but challenges remain. The future is filled with opportunities to fully realize the goal of a seamless Total Force. The Department must build on the momentum of the last three years to achieve effective RC/AC integration. Recognizing there will be continued reliance on the RC in the future and that the lower peacetime, sustaining costs of RC units and individuals can result in a larger Total Force for a given budget, there must be a continuing commitment to build the seamless Total Force of the future.

CONTINUING EDUCATION

One of the remaining barriers to Total Force integration is the inadequate knowledge and understanding of the capabilities and resources of the active, guard, reserve and civilian members of the force. Insufficient understanding leads to less than optimum utilization of the forces. More effective education is a key to effective integration. To make integration a reality and to function effectively as a Total Force, all service

members should be educated about the Constitutional basis and historical evolution of the active, guard, and reserve components. This is essential for understanding the role of the citizen soldier as a link between national security policy and the will of the people. Follow-on curriculum should include wartime and peacetime missions of each component; RC structure and capabilities; accessibility processes; effects of activation on family, employers, and the community; and employment of RC units and individuals.

INTEGRATED MEDICAL TRACKING

Accessibility to cumulative medical information is needed in order to develop wellness intervention programs necessary to maintain a healthy force and ensure deployment readiness. Force health protection requires an integrated, prevention-oriented and surveillance-based clinical system for maintaining a healthy and fit force. The medical requirements have been identified and approved by the Joint Requirements Oversight Council. Follow-on efforts to make the systems available, including the integration of RC requirements, continue.

JOINT DUTY CREDIT AND JOINT PROFESSIONAL MILITARY EDUCATION

Reserve officers assigned to Joint organizations do not receive Joint Duty Credit, are not afforded opportunity to attend Joint Professional Military Education Phase II, and there is no Joint Duty Assignment List for reserve officers. Establishment of Joint Duty Credit, a Joint Duty Assignment List for reservists, and development of non-resident Phase II Joint Professional Military Education specifically designed to meet the needs of reservists, such as the one being developed by National Defense University and Armed Forces Staff College, will further integrate active and reserve components.

USE/RELIANCE ON RESERVIST CIVILIAN SKILLS

As the Services' demand for reservists' unique civilian skills increases, and as the inventory of these skills become more accessible to Service leaders, the Department must consider the potential impact on the reservist. At the extreme, which is plausible for functions requiring certain high demand/low inventory specialties (e.g., information operations), the Services could easily employ a reservist in duties irrelevant to their military occupation. This could negatively affect the reservist's job satisfaction and desire to remain affiliated, and diminish opportunities for advancement and selection for career enabling billets.

TOTAL FORCE MOMENTUM

The mission landscape of U.S. armed forces is changing; and the RC forces are changing with it. Such forces are increasingly viewed as inherently more applicable to today's global military requirements because they are ready for activation on short notice and able to perform an expanding range of missions in both peace and war. The demonstrated performance of the RC in the post-Cold War era has helped clear some of the political obstacles and military barriers that once seemed inherent to any discussion about a wider role for the RC.

Over the last three years, RC senior leaders' participation in the Department's deliberate planning, force structure, and planning, programming and budgeting processes was higher than ever before. The development and application of common standards for funding decisions has established a balanced resourcing posture for all components. Also, the addition of two-star National Guard and Reserve component advisors to the Chairman of the Joint Chiefs of Staff and ten full-time RC general officer

positions in CINC headquarters provide focus for addressing AC/RC integration issues within the Joint Staff and warfighting commands.

The reserve components have a clearly demonstrated ability to make a greater contribution to these efforts; and there are numerous ways in which the RC could relieve the AC of part of the growing overseas burden. The RC could be employed more frequently and for longer periods during overseas contingencies. They have a demonstrated capability to perform a widening range of functions; they are increasingly accessible; and they provide a growing potential for a flexible response to a rapidly changing security environment. A firm foundation is now in place for the integration of the Total Force to continue; at no other time in modern history has there been a more solid basis for change.

CONCLUSION

Out of what began as a concept in 1970 and evolved into policy by 1973, and due to concern that military action without public and full-scale involvement of the reserves should never happen again (as was the case in Vietnam), America's political and military leaders laid the cornerstones for building an integrated Total Force. This commitment, coupled with the termination of the draft at the end of the Vietnam conflict, led to the all-volunteer force. Thirty years later, and at the threshold of a new century, the all-volunteer force and the Total Force have both proven to be stunning successes.

America has traditionally returned to its militia-nation status following periods of armed conflict. During the waning days of the Cold War, key DoD leaders, with the help of Congress and the Services, shifted missions, resources, and end-strength to the reserves. The fall of the Berlin wall and the nearly simultaneous victory in the Gulf, proved the wisdom of these decisions and the mettle of the reserves. In the nearly ten years since the end of the Gulf War, DoD continues to demobilize, downsize, re-mission, modernize, and leverage Total Force integration successes.

CHAPTER 10

QUALITY OF LIFE AND PERSONNEL

QUALITY OF LIFE

The President, Secretary of Defense, and the Joint Chiefs of Staff are deeply committed to providing for the welfare of the men and women who serve the nation so well, and for their families. The initiatives presented in this Chapter contribute significantly to improving the quality of life for service members and their families, while preserving high levels of personnel readiness. The Secretary of Defense hosted three separate forums to highlight the Department's commitment to improving the quality of life of service members and families of the armed forces. Improving health care, housing and compensation are part of the thrust of the Department's efforts. The Quality of Life Executive Committee has continued to focus the Department's attention on areas that need a leadership and resourcing focus. Quality of Life continues to receive support at all levels of command and is an area that continues to dramatically improve. Additionally the Department conducted its first Quality of Life Technology Conference to highlight the areas of where technology is being applied to improve both quality of life as well as service delivery programs. Two examples of such innovative programs include Navy Lifelines and Air Force Crossroads. These two programs take a completely fresh look at service delivery and serve as front end portals for a vast array of services, information and programs.

The Department initiated an effort this year that promotes the financial stability of junior enlisted members and their families. This included work with credit unions, banks and financial planning organizations as well as with non-governmental organizations to ensure that all facets of making the pay of junior enlisted members for further was closely examined and promoted within the Department and within the larger military community. The Department initiated a partnership with the U.S. Chamber of Commerce to join with corporate America on a member of initiatives to include spouse employment. This initiative lays the groundwork for finding career and training opportunities for military spouses.

COMPENSATION AND BENEFITS

America's Military Services continue to meet significant recruiting and retention challenges. One of the keys to success will be to continue to ensure an appropriate quality of life for its service personnel. The nation is experiencing economic prosperity and a growing demand for the skills, experience, and knowledge maintained by its service personnel. These developments mean intensified competition for the high-quality men and women needed for the armed forces. In response to these developments, the Department took actions last year to improve the quality of personnel recruited and retained in America's armed forces. With the continued support of Congress, the Department sponsored major improvements in basic pay, special and incentive pays, and retirement for the Service personnel. These enhancements were essential to retain skills necessary for mission success and to compensate personnel fairly for their outstanding performance and dedicated service to the nation. For FY 2001 the Department sponsored a

major initiative to increase housing allowances and improve the standard of living for military personnel. FY 2001 pay and allowance enhancements include:

- A pay raise of 3.7 percent, effective January 1, 2001, which was 0.5 percent above the average increase in private sector wages. DoD must plan for similar raises in pay for the future in order to compete effectively with the private sector.
- A major housing allowance initiative designed to reduce service members' out-of-pocket costs for living off-post to zero on average. The Department has reduced out-of-pocket costs for the average service member by 4 percent (from 19 percent in FY 2000 to 15 percent in FY 2001). The Department is committed to cutting the average out-of-pocket expenses to 11.3 percent by FY 2002 and reducing them to zero by FY 2005.
- Robust targeting of manning and skill level shortages with special and incentive pays, coupled with management initiatives to correct shortfalls continues in FY 2001. The Department is improving and refining certain bonus programs, to include adjusting aviator continuation pay within Congressional limits and will continue the excellent work begun in FY 2000 to target additional critical retention points for pilots. Efforts are underway to meet the need for increasing selective reenlistment and enlistment bonus programs. Further, much needed reform of Career Sea Pay is being implemented in FY 2001 to improve at-sea manning. Additionally, Hardship Duty Pay is to increase substantially in FY 2001, and Special Duty Assignment Pay is to increase for a limited number of specialties with further program expansion planned for FY 2002.

The Five Year Defense Plan will continue the work begun in FY 2000 to improve compensation for the uniformed forces and support critical recruiting and retention concerns. These initiatives include quality of life improvements and targeted incentive pays, special pays, and bonuses to respond to critical recruiting and retention indicators.

The FY 2000 pay table reform and the ongoing 9th Quadrennial Review of Military Compensation will help ensure a competitive compensation system that aids the effort to recruit and retain quality people and builds the foundation for the 21st century military.

COMMUNITY PROGRAMS

FAMILY SUPPORT

Family well-being is an essential component of the readiness posture of the Department. With the majority of the force married, the Department recognizes the integral link between family readiness and total force readiness. In FY 2000, the Department initiated a number of efforts to promote family readiness and family well-being.

The Department sponsored a world-wide Family Readiness Conference with over 800 participants. The conference participants represented a wide-range of family support personnel from both the active and reserve components. The Department's senior leadership addressed the participants stressing the importance of family support. Likewise, the conference sessions stressed the significance of economic well-being, community development and family well-being for its total force.

Recognizing the importance of promoting the need for expanded employment opportunities for spouses of service members, the Department held a Spouse Employment Summit designed to build a powerful course of action for improving military Spouse Employment Assistance Programs. The Summit assisted the Department and the Military Services to better position themselves to take action to enhance military spouse careers, family income and retention of high quality military personnel.

The Department activated DoD Job Search, the first Department of Labor/America's Job Bank associate site. Although this web site serves transitioning military personnel, future projects will focus on spouse needs and developing employment opportunities.

Family support services were augmented by six interrelated web sites providing information on relocation, personal financial management, transition, child and youth services, teen services and more. Individual Services have also established a number of web sites to provide information on policies and programs and to allow customers to gain access to real-time information. The Department has chartered a special Information Technology Working Group to assess current information technology tools that exist and to develop a strategic plan that will complement existing quality of life programs and delivery services to meet its 21st century requirements.

Recognizing that deployment and family separation are two of the most demanding parts of military life, the Department has undertaken a number of initiatives to ensure it has the right mix of family readiness programs to support families. These initiatives include Department-wide deployment of e-mail and teleconferencing capabilities to support deployed members and promote family cohesiveness and well-being.

The Services have all introduced and expanded their mentoring programs such as Army Family Team Building and Marine Corps Family Team Building to help young military families adjust to the challenges and take advantage of the opportunities of military life. Such programs not only build skills for coping with the unique demands of military life but they build, strengthen, support and increase the capacity of the community to care for each other. Many of these programs are provided by volunteer staff members who then gain/build marketable skills.

The partnership between the active and reserve component family readiness staff continues to yield improved programs and support services for the families of Guard/Reserve personnel. With the increased reliance on the reserve components to accomplish the Department's mission, these programs and services support the critical family readiness portion of the total force readiness posture.

CHILDREN AND YOUTH

The DoD child development system encompasses child development centers, family child care, school-age care programs, and resource and referral programs. Child care is available at approximately 300 DoD locations, including over 800 centers and 9,000 family child care homes. DoD currently meets 58 percent of the need for DoD child care services, and the Services expect to reach the Department's goal of 65 percent by 2003. The National Defense Authorization Act for Fiscal Year 2000, Section 584, presented legislation to provide flexibility for expansion and enhancement of the current program if it is in the best interest of the government. The Services are conducting pilot tests to gauge the success of specific programs. To date, 96 percent of DoD centers have achieved national accreditation.

Military youth issues are extremely important. The Department's Strategic Youth Action Plan continues to provide a road map for youth policy and programs into the 21st century. This plan has had a major impact on every facet of military youth programs. In response to the growing national concerns about the welfare of youth, a partnership between the Department of Defense (Office of Children and Youth); Department of Justice (DoJ) Office of Juvenile Justice and Delinquency Prevention (OJJDP); and the Boys and Girls Clubs of America (B&GCA) was established. Assessments will be conducted in military communities to identify at-risk youth behavior and provide installation commanders with strategies to address significant problems. This service will be provided upon request from installation commanders at no charge, on a first come, first serve basis until the funding is exhausted. The Services continue to pursue affiliation with the Boys and Girls Clubs of America. Affiliation provides military youth programs with access to Boys and Girls Club training programs, program assistance, and allows military youth to participate in national Boys and Girls Club events and competitions. The Services are on track to reach 100 percent affiliation by 2002.

Consistent with the Department's efforts to improve government-wide effectiveness and comply with Government Performance and Results Act requirements, the Air Force has begun to focus on building the strengths of their communities through a results-management approach to program activities. Programs are developed using an Integrated Delivery System at all command levels to meet identified community results via shared responsibility and resources within the base helping agencies.

The Domestic Violence Task Force was initiated in 2000 and will provide its first report to the Department in the first half of 2001. This report will be provided to Congress in May 2001.

MORALE, WELFARE, AND RECREATION

The Department provides MWR programs to support the readiness of the force and the retention of valued service members. MWR programs serve both a peacetime and a wartime function. At home stations, MWR programs are the most visible programs and provide the most tangible evidence that the leadership cares about quality of life. In wartime or during deployments, MWR programs are the lifeline for after duty activity for troops, providing both respite from arduous conditions and a link to American culture and their home lives.

The changing nature of recreational pursuits requires the Department to have programs that are adaptive, targeted, and responsive to the service member. The Department has responded to the changing nature of recreation service delivery today with a vision to provide comparable MWR programs and activities across Services and installations. Technology is also contributing to the changing nature of recreation today in the Department. Examples of this change are high-tech offerings, such as the Cyber Net Cafe at Naval Station Norfolk, that allows service members to have lunch, surf the Internet, or read the latest bestsellers, and physical fitness centers that use smart cards to customize training programs.

To position these programs to provide strong community support, the Department is pursuing the following strategic goals:

- Modernize and upgrade MWR programs, with an immediate focus on physical fitness and library programs. The Department launched Operation Be Fit, a special initiative to improve fitness programs, increase individual participation in fitness activities, and educate the military community on the benefits of an active lifestyle. From a Defense Department point of view, DoD

gains an increase in productivity and decreased absenteeism, a more physically and mentally capable military force, lower health care costs, and improved quality of life within the military community. On January 25, 1999, the Department established a new policy of mandatory core standards for DoD MWR physical fitness centers. Additionally, the Department is developing uniform physical fitness standards and test methods for all Services.

- Pursue an aggressive strategy to improve DoD libraries. The Department's vision is for libraries to be modern information hubs with Internet access that promote educational advancement through lifelong learning, and where people can relax and read their hometown newspaper or favorite magazine. The Department operates 556 libraries of which 260 are land-based recreational libraries. Another 296 libraries provide services aboard ships and submarines. The Department continues to build and renovate libraries and add alternative opportunities for lifelong learning through use of the Internet and other delivery methods. The Department is adding communication lines to increase Internet access, computer hardware access to include CD-ROM drives and software, and access to standard library databases and computer systems that interface with other government and public libraries.
- Improve MWR management and ensure that MWR programs are funded with the right levels and types of funds. MWR programs are arranged in three categories: Category A—mission sustaining activities, Category B—community support activities, and Category C—revenue generating activities. Programs receive appropriated fund support based upon their relationship to the military mission. In 1995, the Department established funding standards to ensure an adequate appropriated fund base for these programs. The military departments have made steady progress in achieving these standards. MWR accounts increased overall by \$35 million in the FY 2001 budget.
- Continue robust MWR support of deployed forces. DoD is committed to continuing robust MWR support for its deployed forces. Many MWR programs are now being provided in permanent structures throughout the deployed area. MWR specialists are providing a multi-faceted, well-rounded recreation programs including top notch fitness centers, computer terminals with internet access and entertainment shows. The Army, Navy, Air Force, and Marine Corps Exchange Service stores are providing for service members' basic needs.

RELIGIOUS MINISTRIES

Military chaplains of both the active and reserve components minister and serve in a mobile and global environment, wherever United States Forces serve. Chaplains provide religious ministry responsive to the needs of service members, families and other authorized personnel at home station or deployed including joint and multi-national task forces. Chaplains from active and reserve components coordinate in joint and multi-national task forces for worship opportunities, sacramental ministrations, pastoral care, religious education and advise the commander on the impact of religion on operations. Chaplains have fielded self-contained mobile (containerized) chapels, highly diverse religious literature, faith rations, and special holy day observance resource packets. Chaplains participate in pre-deployment briefings for service members and their families to prepare them for the separation and its unique and stressful challenges. Redeployment briefings by chaplains and reunion retreats provide continuous support to service members and families throughout the process of serving in U.S. global security commitments. Chaplains provide a spiritual

dimension to family support, Critical Event Stress Debriefings, medical and quality of life programs. The chaplaincy continues to be an integral part of the military operational structure and participates fully in global commitments.

EDUCATION

DEPARTMENT OF DEFENSE EDUCATION ACTIVITY

The DoD Education Activity (DoDEA) operates two distinct programs: the DoD Domestic Dependents Elementary and Secondary Schools (DDESS) for family members at locations within the United States and its territories, and the DoD Dependents Schools (DoDDS) for family members outside the continental United States. Today, DoDEA has a staff of 13,400 and serves 112,206 students in 24 districts and 224 schools located in fourteen countries, seven states, Guam and Puerto Rico. The DDESS systems serves 34,294 students in 70 schools, while DoDDS serves 77,912 students in its 154 schools. Students come from the military communities as well as the children of civilian federal employees throughout the world.

FOCUS ON QUALITY

The DoDEA instructional program provides a comprehensive curriculum from pre-kindergarten through the 12th grade that is competitive with that of any school system in the United States. DoDEA students' academic performance is noteworthy. Key ingredients that have helped keep the spotlight on student achievement are: strong community and parental involvement, a sustained and rigorous focus on excellence in teaching and learning, and a data-driven accountability system to identify student learning gaps and measure and report student progress. DoDEA students take the CTB TerraNova norm referenced achievement test. Every year, at every grade level tested, and in every subject area, DoDEA students score above the national average. In 2000, 70 percent of all students scored in the top two quarters, while only an average of 7.3 students scored in the lowest quarter.

DoDEA System—2000 TerraNova Results Across Grades— Percentage of Students in Each Quarter by Subject					Table 10-1
Subject	Total Number of Students	Students Qtr 76-99	Students Qtr 51-75	Students Qtr 26-50	Students Qtr 1-25
Reading	59733	37.6	32.6	22.7	7.1
Language	59733	37.4	33.4	22.6	6.7
Math	59049	35.0	31.9	23.7	9.5
Science	59652	35.4	33.0	23.8	7.9
Social Studies	59569	34.6	35.7	24.4	5.4

On the National Assessment of Educational Progress (NAEP), the “nation’s report card,” DoDEA students consistently rank at the top of the national scale. DoDEA’s national ranking for NAEP reading is assessed

in 43 states and jurisdictions and national ranking for NAEP writing is assessed in 39 states and jurisdictions. Results are shown in Table 10-2.

Table 10-2

DoDDS National Ranking for the NAEP Assessment 1994–1998 by System and by Ethnic Group

	1998 Reading		1998 Writing
	4th Grade	8th Grade	8th Grade
DoDDS	5th	4th	2nd
African American	1st	1st	2nd
Hispanic	1st	2nd	1st

DDESS's national ranking for NAEP reading is assessed in 43 states and jurisdictions and national ranking for NAEP writing is assessed in 39 states and jurisdictions. Results are shown in Table 10-3.

Table 10-3

DoDDS National Ranking for the NAEP Assessment 1994–1998 by System and by Ethnic Group DoDDS (DDESS) Ranking Against the Fifty States and the District of Columbia

	1998 Reading		1998 Writing
	4th Grade	8th Grade	8th Grade
DoDDS	7th	4th	1st
African American	2nd	2nd	1st
Hispanic	2nd	1st	1st

With a graduation rate of over 97 percent, DoDEA's 3,000 1999 seniors earned more than \$29 million in scholarships and grants. DoDEA attracts and retains highly educated and very talented teachers. 67 percent of DoDEA's teachers hold advanced degrees, a significantly higher percentage than the national average of 47 percent.

STRATEGIC PLAN NETS IMPROVEMENTS

Over the past five years, DoDEA has supported the President's national education agenda through its 1995-2000 Community Strategic Plan (CSP). In its final year, this plan has been the springboard for many educational, funding, and organizational improvements. As a result, DoDEA has been able to accelerate

the expansion of full-day kindergarten, reduce class size in grades 1 to 3, and add new guidance counselors and school psychologists to meet ratios recommended by the professional associations for counselors and psychologists. These actions set counselor student ratios at 1 per 300 (down from 1:500) and psychologist/student ratios at 1 per 1000 (down from 1:3000). Further, the 1995–2000 CSP began a system-wide effort to modernize schools and improve the learning environments with technology. All schools are connected to the Internet—most have the connection in the media center allowing the greatest access. By the end of 2001, all schools will be wired with a full-school Local Area Network connecting all classrooms, laboratories, and other school learning sites in the Internet. At the end of 2000, DoDEA had an average student-to-computer ratio of 4:1.

DoDEA is set to launch its new 2001–2006 Community Strategic Plan in school year 2001–2002. This plan is focused around 4 major goal categories: Highest Student Achievement; Performance-Driven, Efficient Management Systems; Motivated, High Performing, Diverse Workforce; and Network of Partnerships Promoting Achievement. The plan provides the roadmap for keeping DoDEA in the forefront in advancing the Department's agenda for education and as a leader in the nation for improving student performance and achievement.

OFF DUTY/VOLUNTARY EDUCATION

The Department provides academic counseling, testing, and college degree programs through education centers on nearly 300 military installations around the world, thereby operating one of the largest continuing education programs in the world. In addition to classroom instruction, courses are available using various technology-supported modes of instructional delivery. Service members generally receive financial assistance to cover up to 75 percent of tuition costs. However, 100 percent is available to those serving in contingency areas or aboard ships at sea. Participation in this program remains strong. Service members enroll in about 600,000 courses a year and nearly 30,000 earn a degree each year. Policy changes have recently been implemented to provide greater flexibility in using tuition assistance to earn certification or licensure in various technical and vocational fields.

CONNECTING WITH AMERICA ON EDUCATION

The Department recently created a new Educational Opportunities Directorate. The new Directorate is to provide a focal point for creating and implementing a strategy at the national level for collaboration to improve educational opportunities for all military related students; advocate for DoD education policy for schools other than those operated by DoD; place adult continuing education programs with other educational program activities; and be a central office geared to advocate partnerships with American communities for programs such as transition of service members back to civilian employment and Troops to Teachers. Adult Education programs and the Transition Program are already in place and working well.

The early focus of the new Directorate will be on enlarging DoD's role in advocating for a quality, consistent education for all military children. Demographics show that there are just over 965,000 children in ages 3-18 in military families. DoD schools—both overseas and stateside, educate about 110,000 students. That means that over 850,000 military-connected students attend education programs in civilian communities. Until this new Directorate was established, no office or agency had the specific responsibility to advocate for those students not attending DoD schools.

Six round tables will be conducted across the United States in places such as Savannah, Georgia; San Diego, California; Seattle, Washington; and Norfolk, Virginia. The purpose of the forums is to collect information on the issues facing the students of military families as they transition from school system to school system across the country and overseas. It is the intent to use this information in collaboration with the public school systems to develop a national agenda that will insure a continuum of quality education for all military children, no matter where their parents are assigned.

HOW SERVICE MEMBERS LIVE

COMMISSARIES

The Defense Commissary Agency (DeCA) operates a worldwide system of approximately 290 commissaries that provide quality groceries at cost, plus a 5 percent surcharge, to active duty military members, retirees, members of the National Guard and Reserve, and their families.

Recognized as a key benefit that is critical to recruiting and retention, commissaries provide patrons with average savings of 27 percent on purchases over commercial supermarkets. Since 1991, DeCA has achieved major savings without adversely impacting the level of the benefit or savings to the troops, and has significantly reduced operating costs. During FY 2000, the agency worked to satisfy its patrons by improving customer service and upgrading facilities, and initiated a new Best Value Item program designed to increase customer savings. DeCA is determined to increase its effectiveness in FY 2001 through sound management, a well-trained and dedicated workforce, quick responses to customer concerns, and the achievement of additional cost-cutting efficiencies through the utilization of the latest retail technologies.

MILITARY EXCHANGES

Today's exchanges form an important element of the military non-pay compensation package and are a critical component of quality of life. There are three separate exchange systems: the Army and Air Force Exchange system, the Navy Exchange Service Command, and the Marine Corps Exchange. The mission of exchanges fulfills two important benefits; they provide authorized patrons with quality goods and services at low prices, and they contribute their earnings to the services' quality of life programs. Over the past ten years, exchanges have contributed \$2.9 billion to these programs. Exchanges support military members engaged in a variety of contingency operations, such as the peacekeeping mission in Bosnia, and those recently fighting forest fires in the American northwest. The Department has completed an extensive review of the merits of creating an integrated exchange system. DoD has determined that the best way to capitalize on recommendations is to initiate a series of cooperative efforts among the exchanges and individual service exchange actions to maximize efficiencies, which will offset operational costs, ensure modernization of facilities, improve patron services and ensure contributions to MWR programs.

MILITARY HOUSING

The Department continues to pursue the goals of eliminating gang latrine barracks by 2008 and eliminating inadequate on-base housing. The FY 2001 budget request included \$748.5 million to add new housing units and to replace or revitalize approximately 6,300 inadequate family housing units and \$2.7 billion to lease, operate, and maintain family housing units. The Department's housing privatization initiative remains essential to meet the Department's housing requirements by leveraging DoD's resources with

private sector capital and expertise. Additionally, the Department has realigned more than \$3 billion into the housing allowance program to reduce service members out-of-pocket costs for off-base housing to zero on average by 2005. The Department's MILCON budget request also included \$713 million to eliminate over 12,000 inadequate unaccompanied personnel housing spaces. The unaccompanied personnel housing program is on track to meet its 2008 goal. DoD's detailed efforts to improve military family and unaccompanied personnel housing are discussed in Chapter 15.

SAFETY AND HEALTH

The President directed the Secretary of Defense, the Chairman of the Joint Chiefs of Staff, and the Services to aggressively pursue unified Force Health Protection strategies to protect Service members and their family members from health hazards associated with Military Service. DoD is pursuing Force Health Protection strategies that build healthy units and communities, while improving both force morale and warfighting capabilities. The operational force is exposed to health threats throughout its service in CONUS fixed facilities (garrison, base, shore), deployment, employment, and redeployment. DoD is developing the needed policy and procedures to conduct occupational and environmental health threat assessments for all locations, and maintains an unbroken comprehensive record of current health and past health threats and resultant exposure levels for 100,000 U.S. military personnel (the Millennium Cohort Study) over their entire military service cycle. When these efforts are fully implemented commanders will be provided a more complete view of potential health threats with the integration of assessments from these and other threat assessments from intelligence (e.g., land mines, directed enemy fire, and fratricide) and safety (e.g., injuries, vehicle accidents, explosive safety, and aviation mishaps).

HEALTH CARE

The Military Health System (MHS) protects the health of military forces, cares for them when they are ill or injured anywhere around the globe, and offers comprehensive health services to all eligible beneficiaries. The MHS serves 8.1 million beneficiaries and its health program, TRICARE, delivers health services to beneficiaries worldwide in 81 hospitals and over 500 clinics that are augmented by managed care support contractors. The health of deployed forces is inextricably linked to the operation of a robust peacetime health care system of hospitals and clinics. The FY 2001 appropriation for the Military Health System is \$17.2 billion, which represents 5.9 percent of the defense program.

HEALTH CARE

TRICARE INITIATIVES

The Department recognizes health care as a key quality of life issue for service members and their families, and that providing high quality, accessible health care is critical to recruitment and retention efforts. It was this recognition that generated visits to all TRICARE regions to identify areas for improvement and to seek both beneficiary and provider views on health care operations. Complementing these health initiatives, the Secretary of Defense hosted several forums and invited service members and their families to share ideas for how the Department can improve all aspects of military life, including health care. As a result of these many initiatives, the Department has introduced a number of initiatives to improve access to and the

delivery of health services through TRICARE as well as to simplify the program for all beneficiaries. The following initiatives are underway:

- Encouraging increased enrollment in TRICARE Prime
- Improving telephone access
- Improving and standardizing appointment processes
- Improving primary care
- Improving access to care for those with special and extraordinary health needs
- Improving TRICARE claims processing, to include on-line claims status checks
- Implementing TRICARE Prime in remote areas for active duty personnel
- Establishing automatic re-enrollment for TRICARE Prime enrollees
- Establishing Beneficiary Counseling and Assistance Coordinators to help beneficiaries seeking assistance or experiencing health care problems
- Establishing a debt collection assistance program to assist beneficiaries whose medical bills have gone to a collection agency or credit bureau

The findings of an independent study of eight of the 12 TRICARE regions by the Center of Naval Analyses/Institute of Defense Analyses reflect the success of efforts to improve TRICARE. Beneficiary satisfaction has increased over time and the results are consistent across the regions. Beneficiaries were particularly pleased with improved access to care and the quality of the care they received.

The Department is currently working implementation of health care improvements outlined in the Fiscal Year 2001 National Defense Authorization Act, including:

- Eliminate co-payments for active duty family members enrolled in TRICARE Prime and receiving civilian care
- Expand TRICARE Prime to include family members residing with their active duty sponsor in remote areas
- Improve access to health care for retirees throughout their lives
- Enhance the patient safety program to eliminate medical errors
- Create a TRICARE Universal Beneficiary Card recognizable around the world and simplify the transfer of enrollment from one region to another

- Improve access to TRICARE Service Centers
- Adequately fund the Defense Health Program to ensure high quality of care for all beneficiaries

The Department is committed to working with the Military Departments and the Congress to realize these improvements to the Military Health System and to implement the new authorizations contained in the National Defense Authorization Act for Fiscal Year 2001. These new authorizations represent the most significant changes to the Military Health System in several decades. Central to the authorizations are the expanded benefits for those ages 65 and over. These senior beneficiaries of military medicine will gain pharmacy benefits effective April 1, 2001 and entitlement to TRICARE for Life on October 1, 2001.

HEALTH PROMOTION AND PREVENTIVE HEALTH

Health promotion and preventive health programs lead to a constantly fit and ready force, healthy communities at home and abroad, in peacetime and in conflict, and reflect a model health care delivery system. The MHS is seeking to reduce health risks and optimize health status for the beneficiary population by meeting and exceeding Healthy People (2010) goals and by implementing system-wide use of "Put Prevention into Practice". DoD has organized a flag-level Prevention, Safety and Health Promotion Council to prioritize health and fitness objectives and implement a Department-wide plan to accomplish these objectives. Examples include deglamorization, reduction, and elimination of tobacco use; promotion of responsible alcohol use and elimination of alcohol abuse; suicide prevention; injury and occupational illness reduction; and the reduction of sexually transmitted diseases. Expansion of the Women, Infants and Children (WIC) program overseas is another concrete example of health promotion and a Quality of Life Initiative that improves morale and readiness. This program is available to military beneficiaries in the United States through county health departments. Beginning in early 2001, the Department initially will conduct the program at five locations overseas. The WIC program offers nutritional supplements, education and nutritional counseling to eligible DoD personnel stationed overseas.

OPTIMIZING THE MILITARY HEALTH SYSTEM

The Military Health System continually examines its health care quality programs and seeks ways to gain maximum efficiencies in its TRICARE operations. Most significant among these efforts is the implementation of the MHS optimization plan. The plan supports the tenets of population health, including enrolling and assessing populations, forecasting demand, employing demand management strategies, managing capacities, and employing best business practices. To achieve MHS optimization, the plan uses condition management strategies, community outreach, and outcomes analyses. The expected result of optimization is to increase the capacity of military hospitals and clinics, thus bringing more patients back into military medical facilities for care.

A major initiative in optimizing the MHS is the TRICARE Region 11 Lead Agent Pilot Program. This test uses the optimization plan as a business guide and redefines the role of the lead agent who functions as a regional coordinator and is responsible for providing a uniform health care benefit throughout a specific geographic region.

MHS INFORMATION MANAGEMENT TECHNOLOGY

The MHS Information Management/Information Technology (IM/IT) program has a comprehensive review and evaluation process that links IT investments to medical readiness and MHS optimization requirements. This process produces a portfolio of IT investments and validates and streamlines the development, fielding and sustainment of IT systems supporting patient care and health care management. It includes various initiatives to incorporate performance targets and to measure and manage progress toward meeting established goals.

IT investments supporting medical readiness and/or optimization requirements include:

- The Military Computer-based Patient Record also called the Composite Health Care System II. This system will vastly improve day-to-day tasks required to deliver quality health care and will form the information foundation for advancements in patient safety, force health protection, population health, and military performance within TRICARE. Worldwide deployment will be completed in 2003.
- The Defense Medical Logistics Standard Support Program, the first MHS IT program to receive Clinger-Cohen Certification and worldwide deployment authority for its Release 2.0, provides customer-focused material management, ordering and enhanced management capabilities. Release 3.0, which includes state-of-the-art electronic commerce and web-enabled capabilities, and maintenance of wartime medical assemblages, has been accelerated to bring these functionalities to the field and to realize increased return on investment.
- The Expense Assignment System, a significant improvement in the financial management capabilities of military hospitals, was developed and has begun fielding.
- Population Health Operational Tracking and Optimization (PHOTO), a key executive information system, gives health care providers a tool to proactively manage beneficiary health as well as providing a standard set of metrics for assessing effectiveness of MHS population health management initiatives.
- The Pharmacy Data Transaction Service (PDTS) enhances patient safety by merging patient medication information from disparate dispensing locations into a single data repository allowing the identification of potential medication interactions or overlaps in therapy prior to dispensing the medication. The system also enables a robust reporting capability on pharmacy utilization. Currently, the National Mail Order Program and several of the pharmacy retail networks are already on-line, with over 200,000 transactions processed weekly. This system is being activated at the remaining pharmacy retail networks and in TRICARE's military treatment facilities during the next year.
- The Computer/Electronic Accommodations Program (CAP), a recognized leader in DoD, provides assistive technology and accommodations for people with disabilities. The CAP filled over 2,700 accommodations, including 206 accommodations to ensure access to the MHS. Because of its tremendous success, CAP is being considered as the single program to serve other federal agencies.

Accessible and quality medical care for active duty members, retirees, and eligible family members directly affects the Department's ability to attract and retain the quality men and women required to sustain the all-volunteer force. Consequently, the MHS continues to strive to meet its strategic goals of joint medical readiness, healthy communities and becoming a model health system.

RECRUITING HIGH QUALITY INDIVIDUALS

CHALLENGES IN A CHANGING RECRUITING ENVIRONMENT

Recruiting has been extremely challenging over the past several years. The challenge in FY 2000 was due to a robust economy, abundant employment opportunities in the civilian sector, increased interest among potential recruits in attending college, and fewer veterans to serve as role models. The Navy and Marine Corps were on track all year to achieve their recruiting missions while the Army and Air Force struggled. Nonetheless, through innovative programs and a summer surge the Army and Air Force ended FY 2000 above their recruiting goals.

As Table 10-5 shows, FY 2000 was a mixed year for recruiting in the Selected Reserve. For FY 2000, the Army Reserve, the Marine Corps Reserve, the Army National Guard, and the Air National Guard achieved at least 100 percent of their recruiting goal.

The Department has initiated a range of initiatives to address the challenges of recruiting, including authorizing the Services to increase enlistment bonuses and offer a combination of enlistment bonus and Service college funds. The Services also increased the number of production recruiters, and reprogrammed funds to increase recruitment advertising. Because it is costly to replace a recruit who leaves early, the Department is also focusing on reducing first-term attrition. A joint-Service working group is reviewing a series of options to stem such early losses. The Department also is continuing its two-year recruiting reengineering effort, which is testing and evaluating a series of recruiting initiatives to identify and create new market opportunities; improve recruiter efficiency and effectiveness by exploiting recent advances in technology; and reduce attrition. The Department also implemented a number of far-ranging initiatives to revitalize the advertising program in response to the Secretary of Defense's 1999 review of advertising. A Department-wide advertising program has been reengineered and, where feasible, advertising is being contracted out with media experts. All of these initiatives will help the Department better communicate its message to America's youth and the people who influence their decisions.

Table 10-4 Quality and Number of Enlisted Accessions—Active							
FY 2000 Indices				Accessions ^a (in thousands)			
Category (OSD Standard) Service	Percent High School Diploma Grads (90)	Percent Above Average Cat I-III A (60)	Percent Cat IV (4)	Total FY 2000 Objectives (000s)	Total FY 2000 Actuals (000s)	Final FY 2000 Percent Mission Accomplishment	FY 2001 Mission (projected) ^b (000s)
Army	90	64	2.0	80	80.1	100	79
Navy	90	62	0	55	55.1	100	56.3
Marine Corps	95	64	1.0	32.4	32.4	100	33.9
Air Force	99	73	0.1	34	35.2	104	34.6
Total	91	66	0.9	202	202.9	100	203.7
^a Includes prior service accessions. Only Army and Navy recruit to a prior service mission.							
^b Based on Service recruiting production reports and DoD FY 2000 budget estimates (includes prior service accessions).							
^c The Army ran a test program, GED+, that allowed specially screened GED holders to enlist. These people are not included in this number.							

Table 10-5 Quality and Number of Enlisted Accessions—Reserve							
FY 2000 Indices				Accessions ^a (in thousands)			
Category (OSD Standard) Service	Percent High School Diploma Grads (90)	Percent Above Average Cat I-III A (60)	Percent Cat IV (4)	Total FY 2000 Objectives (000s)	Total FY 2000 Actuals (000s)	Final FY 2000 Percent Mission Accomplishment	FY 2001 Mission (projected) ^b (000s)
Army Reserve	90	62	2	48.5	48.6	100	44.3
Naval Reserve	92	76	0	18.4	14.9	81	16.3
Marine Corps Reserve	97	76	.3	5.9	6.1	103	5.8
Air Force Reserve	93	73	0	9.6	7.7	80	8.0
Army National Guard	87	61	2	54.0	62	115	60.3
Air National Guard	96	78	0	10.1	10.7	106	14.4
Total	89	65	2	150	152.7	102	151.9
^a Includes prior service accessions.							
^b Based on Service recruiting production reports and DoD FY 2000 budget estimates (includes prior service accessions).							
^c The Air Force Reserve goal includes officer and enlisted data.							

NATIONAL SERVICE AND RECRUITING PROGRAMS

The Department continues to review the potential impact of National Service on military recruiting and believes that both programs can coexist successfully. The National Service program is smaller and the value of its benefits is lower than the value of military enlistment benefits.

IMPROVING FORCE MANAGEMENT

PROMOTIONS

The promotion system has benefited from stabilized manning in the officer and enlisted communities. Enlisted pin-on-timing has not appreciably changed in recent years. What has changed is the higher selection rates than in the previous years. The Department anticipates that these higher selection rates, based primarily on force structure changes, will continue for the future. This will provide for increased opportunities for members of the enlisted force to achieve positions of higher responsibility and authority. Officer promotions have also remained steady as a result of stabilized officer manning levels. The predictability of both promotion opportunity and timing reduces the level of anxiety and assists in the individual's career planning decisions. For the future, the Department expects continued stability in officer promotions.

EQUAL OPPORTUNITY

Through the years, the Department has put into place policies and programs that allow all military members to serve the nation in an environment of dignity and mutual respect. In the 21st century, DoD will continue to put a high premium on equal opportunity as a military necessity because it contributes to the readiness of the force. It does this by allowing the Department to recruit from the widest pool of qualified applicants, assign and train persons according to the needs of the Services, evaluate personnel based on their performance, and protect all personnel from unlawful discrimination and harassment.

Top down commitment to equal opportunity, beginning with senior DoD and Service leadership continues to bring about aggressive military equal opportunity programs. These programs include provisions for mandatory, recurring education and training programs in human relations and equal opportunity for all service members; procedures for processing complaints of discrimination and sexual harassment; and requirements for each Service to implement affirmative action plans. Additionally, the Services developed individual climate surveys to give local leadership a sense of racial and ethnic relations within their units, and in November 1999, DoD released two milestone reports that together provided a comprehensive, global assessment of equal opportunity progress.

The Armed Forces Equal Opportunity Survey was the first of its kind aimed at developing a full picture of equal opportunity-related perceptions and behaviors within the armed forces. Survey questions covered positive racial/ethnic interactions, insensitive, discriminatory, harassing and even violent interactions, and perceptions of official actions, both to maintain equal opportunity and to deal with failures in equal opportunity. The career progression study reviews the key stages of officer career progression, such as recruiting, commissioning, training, assignment, evaluation, promotion, and retention. Several approaches were employed to analyze the career progression of women and minority officers, including trend analysis, statistical modeling, and focus groups and interviews. With the release of both reports, the Secretary of

Defense called for the Department to renew its dedication and redouble its efforts to maintain dominance as the world's greatest and most diverse fighting force.

WOMEN IN THE MILITARY

DEFENSE ADVISORY COMMITTEE ON WOMEN IN THE SERVICES

The Defense Advisory Committee on Women in the Services (DACOWITS) was established in 1951 to assist the armed forces in recruiting quality women for military service. The role of DACOWITS has since evolved into advising the Secretary of Defense on all policies relating to the utilization and quality of life of female Service members, as well as general quality of life issues for all Service members.

In 2000, DACOWITS members conducted over 80 CONUS installation visits covering all five Services including the Reserve Forces. Additionally the Executive Committee conducted overseas installation visits in Germany, Italy, Kosovo, Jordan and Sicily. Over 1500 Servicewomen and Servicemen provided their views to DACOWITS members on such priority issues as child care, leadership, health care, pay, OPTEMPO/PERSTEMPO and housing. Command climates were, for the most part, generally supportive of women in the Services. In 2000, DACOWITS focused on:

- Ensuring a safe, healthy and responsive environment for military women and their families to live and work. Areas of emphasis include: appropriate pay and compensation; and affordable, available and accessible quality healthcare, housing and child/youth care
- Promoting a fair, equitable and professional work environment for women
- Addressing disparities in promotion/selection opportunities
- Encouraging command climates that foster good order and discipline
- Supporting measures that ensure an environment free from unlawful discrimination
- Ensuring that women have the opportunity, free from artificial barriers, to contribute to the Nation's defense commensurate with their talents and abilities
- Addressing issues of recruiting, training and retention of the most qualified women

CIVILIAN PERSONNEL

WORKFORCE SHAPING

Over the past 11 years, the Department has been extremely successful in reducing the number of civilian positions efficiently, humanely, and without mission disruption. This has largely been the result of strategic planning, close program oversight, and the use of innovative transition tools. However, the aging of the DoD workforce, combined with constrained hiring during this period, has created significant real and anticipated skill imbalances within the Department. Annual accessions have fallen to about 20,000 new employees a year—a replacement rate of less than three percent. In addition, over a third of the

Department's current employees are more than 50 years old and approaching retirement. The net effect is a workforce that is not balanced by age or experience and that risks the orderly transfer of institutional knowledge. To mitigate these threats and to accommodate ongoing planned reductions, the Department is revising its overall employment strategy to focus on workforce shaping. Doing so involves a four-part strategy: research into what is happening; planned recruitment and accession management; development and retention; and careful transition management. Where appropriate, the Department is seeking legislative authority to further this strategy.

RESEARCH ON CIVILIAN WORKFORCE ISSUES

During FY 2000 the Department expanded its already active program of analytical activities related to civilian manpower issues using both in-house and contractor researchers. Internal staff have undertaken a wide variety of studies on topics such as changes in civilian work-year costs, trends in separation rates, and progress in meeting equal opportunity goals. In addition, results from an in-house micro-simulation projection model have allowed policy makers to anticipate future workforce developments, such as continued aging, and adjust personnel policies accordingly.

The special research projects underway in FY 2000 included: the promotion and retention of high-quality DoD civilians; the sources and durability of savings from privatizing DoD support activities (through the A-76 program); the changing nature of work performed by DoD civilians; the ability of DoD to employ high-quality scientists and engineers in DoD laboratories; and the applicability of selected military manpower management practices to the civilian workforce. Projects centering on education and career development include a study of Defense civilian career development programs, a survey of mid-level education and training options, and completion of a relational database management system for the Defense Leadership and Management Program. Special studies covered topics as diverse as the aviation maintenance workforce and the Department's use of employment incentives. Taken together, these studies are promoting an unprecedented wealth of insights into the civilian workforce.

CIVILIAN TRAINING, EDUCATION AND DEVELOPMENT

With fewer and fewer employees to complete a more complex mission, DoD has adopted a more corporate approach to training, education, and development of the civilian workforce. The most visible evidence is the Defense Leadership and Management Program (DLAMP), a Department-wide program of joint civilian education and development. Implementing recommendations of the Commission on Roles and Missions of the Armed Forces, DLAMP fosters an environment of shared understanding and sense of mission among civilian employees and military personnel. Inaugurated in 1997, the program incorporates defense-focused graduate education, rotational assignments in a wide variety of occupations and organizations, and professional military education into a comprehensive program designed to prepare employees for 3,000 of the Department's top civilian leadership positions.

DLAMP has grown to over 1,100 participants, with an anticipated addition of 350 new participants each year. The program has conducted 135 graduate courses, with 1,837 participants. It has dramatically increased civilian participation at the senior service schools, and has sent participants to a new three-month Professional Military Education course at the National Defense University. While the program's overall level of support and the educational opportunities is not directly related to participant promotions, it is

important to note that 41 individuals were selected for senior executive service positions while participating in DLAMP.

To further its investment in people, the Department is beginning work on a program to address developing leadership and management competencies. The Department has also proposed legislation aimed at expanding the opportunities for funding employee efforts to obtain college degrees. Combined with renewed use of recruitment and retention bonuses and streamlined methods for hiring employees, this proposal should improve the hiring process and enhance overall retention, particularly of younger employees. The Department is expanding studies into recruitment and retention patterns with an eye toward further innovation. Used in conjunction with managed attrition through expanded buyout and early retirement, such initiatives will provide the Department a solid basis on which to shape the workforce of the 21st century.

LABOR-MANAGEMENT PARTNERSHIPS

One of the key objectives of Civilian Personnel Policy has been to strengthen labor-management relations. To implement the recommendations of the Defense Partnership Council (DPC), DoD established a partnership web page. Among other things, this website served to announce opportunities for training on a range of topics, including how to begin a partnership, non-adversarial bargaining, mediation, and interest-based problem solving. Further, the Department provided on-site assistance to nascent partnerships and to parties engaging in interest-based bargaining. The Secretariat provided a model for partnership activity throughout the year. For example, the Deputy Under Secretary (Installations) and the Deputy Assistant Secretary of Defense (Civilian Personnel Policy) kept the DPC apprised of strategic sourcing efforts within the Department and regularly met with union officials to ensure mutual understanding of goals and concerns on this critical effort. In addition, the Department formed several labor-management working-groups to address potential employee pay problems, some of which were based on the recommendations of interested unions. This fiscal year also saw the publication of a comprehensive study of DoD sites eligible for partnerships; this report now stands as a model for the rest of government.

CIVILIAN PERSONNEL REGIONALIZATION AND SYSTEMS MODERNIZATION

The Department has made major strides toward modernizing the delivery of civilian personnel support services during FY 2000. November 1999 saw the completion of efforts to align administrative support into 22 component regional support centers. Through these consolidations and the deployment of a single automated support system, the modern Defense Civilian Personnel Data System (DCPDS), the Department expects to attain a ratio of 88 employees served per personnel specialist by the end of FY 2001 compared to the baseline of 61:1.

Relying at its core on commercial off-the-shelf software, the modern DCPDS provides personnel transaction and management information support down to the lowest organizational levels of the Department. Indeed, managers will have system access from their desktop computers. When fully deployed, the modern DCPDS will contain records for approximately 800,000 employees, including those for local national, nonappropriated fund, and military technician employees. It will provide the automated backbone that will ensure the success of regionalization.

The Department deployed a modern DCPDS to three operational test sites in the first quarter of FY 2000. Based on system qualification testing completed in February 2000, the evaluators recommended it for full deployment. The DoD Chief Information Officer certified that this system complied with the Clinger-Cohen Act requirements and was ready for deployment in May 2000. Deployment should be completed during calendar year 2001. Once fully deployed, the modern DCPDS will be one of the largest automated personnel systems in the world.

DEMONSTRATION PROJECTS

Personnel demonstration projects allow federal agencies to test innovative personnel management practices by waiving civil service regulations. The Military Departments are conducting demonstrations in nine science and technology reinvention laboratories (four Army, three Navy, and one Air Force). Additionally, the civilian acquisition workforce personnel demonstration is operating DoD-wide. During FY 2000, DoD submitted two more Army laboratory proposals to the Office of Personnel Management for review and approval; these demonstrations are slated to begin this year.

NONAPPROPRIATED FUND (NAF) UNIFORM HEALTH BENEFITS PROGRAM

Consistent with Congressional direction, DoD successfully implemented the NAF Uniform Health Benefits Program on January 1, 2000, to replace the six separate and different non-Health Maintenance Organization (HMO) health benefit programs previously offered by NAF employers. The new program provides comprehensive benefits including hospitalization, medical and surgical care, mental health and substance abuse services, vision and hearing benefits, preventive care, coverage for prescription drugs, and optional comprehensive dental coverage. A third-party administrator provides access to networks of doctors, hospitals, health care facilities, and pharmacies, and performs claims administration for the Program. Where available, HMO plans continue to be offered by NAF employers.

Each NAF employer experienced increases in medical plan enrollments over 1999 enrollment levels. The DoD NAF Uniform Health Benefits Program improves benefits for many employees, particularly in the area of post-retirement medical care. Many employees also pay lower premiums than they paid under the NAF employer plans in 1999. Approximately 40,000 DoD NAF employees and retirees and their family members are now enrolled in the DoD NAF Health Benefits Program.

INJURY AND UNEMPLOYMENT COMPENSATION

The Department's consolidated injury compensation and unemployment compensation programs again set the government-wide standard. The program's active evaluation and verification methods for reviewing claims include the use of DoD liaison personnel collocated with Department of Labor district offices, home visits, and a comprehensive automated data tracking system deployed at 415 installations. Since 1994, these methods have directly contributed to cost avoidance of \$74.6 million in the Department's injury compensation bill. In addition, by auditing unemployment compensation claims, DoD avoided \$7.6 million in erroneous charges.

FIELD ADVISORY SERVICES

In FY 2000, Field Advisory Services (FAS) continued to provide the highest level of technical advisory support to approximately 11,500 personnel specialists in over 400 customer service units and 22 regional offices worldwide. To serve the changing needs of the DoD human resources community, FAS now

provides technical advisory services and policy support through four functional branches: Benefits and Entitlements, Classification and Pay, Labor and Employee Relations, and Staffing and Development. Its modern phone system, database, and Internet capabilities allow immediate access to personnel advisors and to written materials. Annually, FAS trains approximately 8,000 personnel specialists, managers, and employees; reviews over 100 labor agreements; dispatches over 23,000 technical guidelines and job aids; responds quickly (normally within one day) to over 20,000 field inquiries; and provides detailed, comprehensive support in the development of policies and programs affecting the Department's civilian personnel.

CONCLUSION

Quality of Life Programs that meet the changing needs of service members and their families, both active and reserve, deployed overseas and those serving in the United States continue to be a highly visible and important priority within the Department. The Department recruits individuals and retains families. This can only be done by making QoL a daily priority at all levels within the Department. QoL has a direct impact on Military readiness. Leveraging technology, improving education, improving health care, housing and how service members are paid, recruited and retained all are critical components of Quality of Life. The Quality of Life Executive Committee on behalf of the Secretary of Defense ensures that QoL needs are addressed and reviewed on an ongoing basis. It also reviews all resource decisions to ensure that QoL is not adversely impacted. The QoL EXCOM also assists the Secretary in conducting forums and programs reviews to ensure that QoL needs are articulated and that they are being met.

PART III

TRANSFORMING U.S. ARMED FORCES

CHAPTER 11

A STRATEGY FOR MILITARY TRANSFORMATION

The aim of the Department's transformation strategy, introduced in last year's report and updated in this chapter, is to ensure U.S. military preeminence well into the 21st century. Much about the future security environment is uncertain, such as the identity of the nation's adversaries and the precise ways in which they will threaten U.S. interests. However, some aspects of the emerging threat environment are already clear. A number of states will have the capability to threaten U.S. vital interests through coercion, cross-border aggression, or other hostile actions. Other states will face internal humanitarian crises and ethnic conflict, which may require the U.S. military to respond quickly while minimizing risks of American and noncombatant casualties. Whether in the context of major theater war or smaller-scale contingencies, future opponents are likely to threaten or use asymmetric methods such as terrorism, cyber attacks on critical computer-based networks, and weapons of mass destruction in an attempt to offset U.S. conventional superiority.

Transformed military forces are needed because the strategic environment is changing; they are possible because the technologies that are changing the civilian world are changing the military sphere as well. With innovative operational concepts and new organizational arrangements, the Department can take advantage of new information systems and other technologies that will allow U.S. forces to be more responsive, faster, more agile, more precise, and better protected. More tailored forces and increasingly precise weaponry and targeting will allow greater massing of effects with less massing of forces, thus decreasing the vulnerability of U.S. forces. In short, U.S. forces must exploit revolutionary technologies in order to protect citizens at home and project power abroad in the 21st century.

The Department is transforming its forces to meet future challenges through a strategy that integrates activities in six areas:

- Service concept development and experimentation efforts that make use of promising technologies to perform critical tasks.
- Joint concept development and experimentation to harmonize Service capabilities and develop joint solutions, ensuring that future joint force commanders have the tools needed to meet key operational challenges.
- Robust implementation processes in the Services and joint community to rapidly identify the most promising new concepts and capabilities that emerge from experimentation and put them on a fast-track toward incorporation in the force.

- Science and technology efforts focused on areas that can enhance U.S. military capabilities to meet projected challenges, with close ties between technologists, innovators, and warfighters.
- Efforts to encourage international transformation activities. The United States is most likely to operate in some future contingency as part of a coalition. While U.S. forces may differ from those of partners in significant ways, DoD must ensure interoperability in command and control and other capabilities critical for effective coalition operations.
- Exceptional people with the right skills for the 21st century and attitudes nourished in a culture that encourages bold innovation and leadership.

After describing the Department's vision for full-spectrum dominance in future warfighting capabilities, articulated in *Joint Vision 2020*, this chapter summarizes the efforts underway in each of the six areas outlined above.

JOINT VISION 2020 AND FULL-SPECTRUM DOMINANCE

Joint Vision 2020 establishes full-spectrum dominance as the overarching objective for a transformed U.S. military. Full-spectrum dominance is the ability to defeat any adversary and control any situation across the full range of military operations, whether operating unilaterally or in combination with multinational and interagency partners. The full range of operations includes maintaining a posture of strategic deterrence. It also includes theater engagement and presence activities, conflict involving employment of strategic forces and weapons of mass destruction, major theater wars, regional conflicts, smaller-scale contingencies and those ambiguous situations residing between peace and war, such as peacekeeping and peace enforcement operations.

Full spectrum dominance implies an ability to conduct prompt, sustained, and synchronized operations with forces tailored to specific situations and possessing freedom to operate in all domains—space, sea, land, air, and information. Additionally, given the global nature of our interests and obligations, the United States must maintain the ability to rapidly project power worldwide in order to achieve full-spectrum dominance.

Joint Vision 2020 postulates that achieving full spectrum dominance will be possible through four essential operational concepts which, enabled by information superiority and technological innovation, will yield military superiority across the complete range of potential military operations:

- Dominant maneuver is the ability to gain positional advantage with decisive speed and overwhelming operational tempo. Widely dispersed air, land, sea, amphibious, special operations and space forces, capable of scaling and massing forces and the effects of their fires, will secure a positional advantage through the application of fire and maneuver supported by information, deception, engagement, mobility and counter-mobility capabilities.
- Precision engagement is the ability to locate, monitor, discern, and track objectives or targets; select, organize, and use the correct delivery systems; precisely generate desired effects; assess results; and reengage with decisive speed and overwhelming operational tempo.

- Focused logistics is the ability to provide the right personnel, equipment, and supplies in the right place, at the right time, and in the right quantity. This will be made possible through a real-time, web-based information system providing total asset visibility as part of a common relevant operational picture, effectively linking the operator and logistician across Services and support agencies.
- Full-dimensional protection involves attaining an acceptable level of risk through the tailored selection and application of layered active and passive measures, within the domains of air, land, sea, space, and information. Full dimensional protection requires a wide range of activities, including theater missile defense and possibly limited missile defense of the United States, antiterrorism measures, emergency preparedness, and proactive engagement strategies.

Information superiority is the key enabler for all four of these operational concepts. *Joint Vision 2020* also identifies interoperability as the foundation of effective joint, multinational, and interagency operations:

- Information superiority is the ability to collect, process, and disseminate an uninterrupted flow of information, necessary for achieving the operational objectives, while exploiting or denying an adversary's ability to do the same.
- Interoperability is the ability of systems, units, or forces to exchange services with other systems, units, or forces and to use those services to enable them to operate effectively together.

Joint Vision 2020 includes a brief projection of how potential security threats will likely evolve in the future and what strategic and operational capabilities they will demand of the U.S. However, the Department recognizes that our understanding of the challenges inherent in the future security environment will continue to mature. We must be prepared to react to unforeseen changes in the strategic environment and the adaptations of potential enemies, to take advantage of new technologies, and to account for variations in the pace of change. Therefore the process of creating the joint force of the future must remain flexible, as must the process for identifying the demands the future security environment will make on our military capabilities.

SERVICE CONCEPT DEVELOPMENT AND EXPERIMENTATION

Each of the Services has concept development and experimentation activities focused on its core competencies, with activities organized to explore capability improvements in the near-, mid- and far-term. They also have established battlelabs that bring warfighters and technologists together to work on key areas of warfighting.

Innovative and rigorous Service and joint concept development and experimentation are central to the Department's efforts to achieve dramatic military transformation. In order to be prepared for the challenges of the future, DoD must learn systematically from real-world operations, as well as from experiments using wargames, computer-assisted simulations, and field trials that simulate future operational capabilities. History shows it has often been disastrous defeat on the battlefield that prompted a military organization to change. A vigorous program of concept development and experimentation pitting future U.S. forces against simulated skilled, determined opponents allows the Department to create the needed stimulus for

change. The opponents portrayed in these experiments must be innovative and effective. The expectation is that U.S. vulnerabilities can be discovered through such exercises and corrected before a future opponent can find and exploit such weaknesses in war.

The Services' visions that guide concept development and experimentation efforts are consistent with the *Joint Vision 2020* objective of fielded forces that are faster, more agile, more precise, better protected, more rapidly deployed, and more easily sustained. The forces envisioned:

- Are capable of rapid deployment in crisis and decisive operations in combat.
- Depend on the integration of lethal and non-lethal effects from dispersed forces.
- Are agile and can reorganize quickly in response to developing situations.
- Possess modern, responsive logistics and support systems that constantly monitor demand and supply, and a dynamic support pipeline to achieve much smaller deployed footprints.
- Exploit information technology to enable rapid, adaptive planning and operations in which deployed forces utilize the non-deployed information support structure via high-bandwidth Internet-like communications.

ARMY

On October 12, 1999, the Army articulated a vision to better meet the challenges of the 21st century: "Soldiers on Point for the Nation...Persuasive in Peace, Invincible in War." The requirement to transform the Army is based in part on the requirement to respond more rapidly across the full spectrum of operations. The Army's vision is a force that combines the decisive warfighting lethality of today's mechanized forces with the strategic responsiveness of today's light forces. The strategic significance of land forces resides not only in their ability to fight and win the nation's wars, but also in providing options for shaping the global environment.

Achieving the Army's vision requires the comprehensive transformation of the entire Army—from the operational force to the institutional Army. The transformed force envisioned is an Objective Force that will be responsive, deployable, agile, versatile, lethal, survivable, and sustainable. As an objective measure of force responsiveness, the Army will have the capability to deploy a brigade anywhere in the world 96 hours after liftoff, a warfighting division in 120 hours, and five divisions in 30 days.

Over the near and mid-term, the Army Force XXI effort is committed to improving situational awareness at the operational and tactical levels by digitizing the current force. The Force XXI program includes selected recapitalization by upgrading existing heavy force systems, like the M-1 Abrams tank, the M-2 Bradley fighting vehicle, and the Apache helicopter. The first unit to field Force XXI capabilities will undergo a capstone exercise in 2001 to validate the capabilities of the digitized division. Restructured digital heavy divisions will have 25 percent fewer combat systems, but greater lethality through synchronized precision fires and maneuver enabled by greatly improved knowledge of friendly and enemy dispositions. They will also be smaller by approximately 3,000 personnel due to support force efficiencies and the reduced number of combat systems.

Force XXI work also includes experimentation with measures to improve the survivability and lethality of light forces. The Army is developing ways to increase the tactical mobility, survivability, and lethality of light forces while also digitizing their information systems. Programs are underway to improve the effectiveness and efficiency of joint command, control, communications, computers, and intelligence; to enhance contingency force operations in urbanized terrain; and to improve the capability to conduct early entry operations.

To bridge the gap between the capabilities of today's force and the Objective Force, the Army will field an Interim Force of six to eight brigades, employing interim armored vehicles and currently available off-the-shelf equipment. These Interim Brigade Combat Teams (IBCTs) will have full-spectrum capability, be deployable worldwide in 96 hours with the appropriate lift assets, and will be available for apportionment to the warfighting CINCs. Operational availability of the first of these IBCTs is dependent upon fielding the recently selected interim armored vehicle.

The Army plans to field the first units of the Objective Force in eight to ten years. The Objective Force will be equipped with future combat systems incorporating state of the art technologies and capabilities into a multi-mission system of systems—providing the National Command Authorities an increased range of options for regional engagement, crisis response and sustained land-force operations. However, the Army transformation plan is far more comprehensive than just modernization of equipment and formations. The entire Army will be transformed—from leader development programs to installations to combat formations. All aspects of the Army's doctrine, training, leaders, organization, materiel, and soldiers will be affected.

The Army's Training and Doctrine Command (TRADOC) serves as the lead agent for the transformation of the operational force and as the focal point for developing the concepts, doctrine, and leader development required to field the Interim and Objective Force. TRADOC directly supports Army Transformation at Fort Lewis, WA, with the eight Army battlelabs that operate under its direction: Space and Missile Defense, Maneuver Support, Mounted Maneuver Battlespace, Dismounted Battlespace, Air Maneuver, Battle Command, Depth and Simultaneous Attack, and Combat Service Support.

The Army organizes its longer-term analysis around the Army Transformation Wargame (ATWG) series, a follow-on effort to the Army After Next Wargames conducted in past years. Recently, the ATWG effort was modified to better support the Army's new vision by informing the Army's leadership about warfighting concepts and capabilities required for the Objective Force, focusing on the demands of the strategic and operational environments. This linkage will require a continuous improvement process over the next 30 years. The Army's first annual Army Transformation Wargame was conducted in May 2000, and investigated the design of the Objective Force, focusing on the strategic and operational levels of war. The game demonstrated the critical need for transformed strategic lift—even for the lighter Objective Force built around the future combat systems—and the pivotal role combat support and combat service support will play in the transformed Army. The ATWG effort will continue with follow-on force projection and operational wargames in the next year, all tailored to feed Army and joint concept development and experimentation.

NAVY

The strategic vision...*From the Sea* drafted in the early 1990s shifted the Navy's focus to the littorals; *Forward... From the Sea*, adopted in 1997, defined this vision within the context of naval forces being forward-based throughout the spectrum of operations, from peacetime presence to crisis and war. The Navy's new *Maritime Concept* now provides the organizing principles for the new capabilities and concepts needed to assure access forward with combat-credible forward presence and knowledge superiority. The *Maritime Concept* exploits access to cyberspace to provide a superior knowledge-position relative to opponents, which allows U.S. forces to act with timely and decisive effect. Accordingly, the Navy is transforming to a knowledge superior networked force in order to dictate the operational tempo across a battlespace that includes sea, air, land, space and cyberspace.

Network-centric warfare is therefore a key organizing principle for the Navy. It does not change the underlying tenets of warfare; rather it assists commanders in rapidly making good decisions. In the future, speed of command—the ability to make timely, correct decisions inside an adversary's detection and engagement timeline—will be as important as command of the seas to achieve full-spectrum dominance across the battlespace and to conduct effects-based warfare. Additionally, new mission areas—such as projecting defense ashore with Theater Missile Defense (TMD) and precision land-attack deep into enemy territory—establish requirements for new capabilities and concepts. These are being explored and developed through an extensive concept development and experimentation program, and several complementary near-term transformation efforts that draw on newly available technologies. Most noteworthy are:

- At-Sea Battle Laboratory: A cooperative effort with the Defense Advanced Research Projects Agency designed to encourage the rapid introduction of advanced technologies to the fleet. This effort uses the Third Fleet command ship, USS Coronado, as a platform of opportunity for the installation and testing of the most promising programs.
- Information Technology-21: A communications-and-networking backbone that will support the rapid exchange of information between naval and joint platforms. This initiative complements the Navy-Marine Corps Intranet, and when both are combined with the Marine Corps Tactical Network, will provide a worldwide end-to-end communications and networking capability. New doctrine and organizations are being developed to allow the Navy to take full advantage of these changes.
- Cooperative Engagement Capability (CEC): A system that permits each shooter's combat system to view every asset in the data link as if it is that unit's own sensor. CEC addresses the requirement to achieve more effective air and missile defense. In addition, every participating unit has an identical, real-time picture of the battle space, including identification information. The first two CEC systems were delivered to the fleet in FY 1999—with the last of 81 to be delivered in FY 2007.

The Naval War College oversees the Navy's concept development and experimentation efforts. It supports Navy near and mid-term experimentation on network-centric warfare with the Navy Warfare Development Command (NWDC). The Navy's principal experimentation activities take place in the fleets themselves in the form of fleet battle experiments (FBEs), which occur while the fleet is engaged in training exercises.

These experiments, organized and coordinated through the NWDC's Maritime Battle Center, have already produced results and influenced current operations. Some of the more recent FBEs include:

- FBE-Foxtrot, Fifth Fleet, December 1999: FBE-Foxtrot investigated coordinated joint naval and land fires (including those provided by SOF and U.S. Army Apache helicopters) through an experimental Joint Fires Element. It explored time-critical targeting of a coordinated, multi-layered enemy at a naval chokepoint. The experiment also explored using distributed, collaborative planning to enhance understanding of the undersea environment and operational situation in countermine warfare. A battle management cell for defense against chemical and biological weapons was established to seek improvements in chemical/biological defense readiness and vulnerability assessment, warning and reporting of chem/bio events, and coordination of intra-theater support and initial responses to chemical/biological attacks.
- FBE-Golf, Sixth Fleet, April 2000: FBE-Golf investigated concepts allowing the Navy to enter and remain in the littorals indefinitely with the ability to provide intelligence, fires, command and control, sensor management, tracking and targeting from a single battle management cell. Key areas for experimentation included time-critical targeting, and joint and combined theater air missile defense with NATO participation in information management. As a result of the experiment, Commander, Sixth Fleet adopted a digital target folder concept that creates an integrated target environment for commanders, planners, and operators—significantly increasing the effectiveness and situational awareness of his forces.
- FBE-Hotel, Second Fleet, September 2000: FBE-Hotel, along with advanced warfighting experiments from each of the other Services, was conducted in conjunction with the U.S. Joint Forces Command (USJFCOM) Millennium Challenge Experiment in September 2000. Its focus was on future warfighting capabilities needed to achieve and maintain access in the littoral—exploring parallel operations, mine interdiction warfare, anti-submarine warfare, force protection, reconnaissance surveillance and target acquisition, stand-off warfare, and the execution of operations by the Joint Forces Maritime Component Commander with organic forces.

The Navy continues to plan and execute its fleet battle experiments. FBE-India will be conducted in multiple locations throughout the southwestern United States in the Spring of 2001 and will focus on forced entry and access for expeditionary/contingency operations.

To explore transformation requirements over the longer term, the Naval War College sponsors an annual summer Global Wargame. This game examines U.S. policy, strategy, and operational concepts in the context of global and regional trends, issues, and crises to identify requirements the future Navy commanders. The results from longer-range wargaming like the Global Wargame can suggest productive experimental goals for fleet battle experiments, and in turn are influenced by the results of FBEs. In addition to the Global Wargames at Newport, the CNO's Strategic Studies Group is also charged with evaluating longer term transformation requirements and potential innovative concepts and enabling technologies.

MARINE CORPS

Marine Corps Strategy 21 is the capstone strategy of the Marine Corps. It is reflected in the revised Marine Corps capstone operational concept, *Expeditionary Maneuver Warfare*, which provides an overarching framework for full-spectrum capabilities and evolved from *Operational Maneuver from the Sea*. It provides the basis for a Marine Corps organized, trained and equipped to conduct expeditionary operations in a joint and combined environment within the complex spectrum of 21st century conflict. It describes a Marine Corps of enhanced strategic agility, expanded operational reach, and improved tactical flexibility.

Twentieth century amphibious operations moved through distinct phases, pauses, and reorganizations. Twenty-first century expeditionary forces will be capable of moving directly from far offshore to objectives deep inland, uninterrupted by topography or hydrography, achieving greater surprise and complicating the adversary's defensive problem. In conjunction with the Navy, Marines will provide an early forcible-entry capability from the sea. The ability to strike critical vulnerabilities and unhinge an adversary will be achieved through the combination of the Landing Craft Air Cushion, the Advanced Amphibious Assault Vehicle, and the V-22 Osprey tilt-rotor aircraft. The new concept focuses on the full-spectrum capabilities of the Marine Corps, the employment of scalable Marine Air-Ground Task Forces (MAGTFs), to include the Marine Expeditionary Brigade, and the various means through which Marine forces integrate with joint and combined task forces. The MAGTF will be able to rapidly reorganize and reorient in response to changing tactical opportunities throughout the full spectrum of future operational environments, while able to operate flexibly from expeditionary locations at sea or ashore.

Marine Corps experimentation with the concept, *Expeditionary Maneuver Warfare*, is organized by the Marine Corps Combat Development Command (MCCDC) at Quantico, VA, and specifically by the Marine Corps Warfighting Laboratory which was created in 1995. In 1996, the Commandant created a special purpose unit to serve as the command element and training cadre for other Marine units participating in the Warfighting Laboratory's experiments.

The Marine Corps Warfighting Laboratory's process for carrying out its responsibility to investigate concepts, tactics, and technologies is organized around a three-phase, five-year experimentation plan called Sea Dragon. Each phase starts with limited objective experiments, which are small-scale focused efforts that usually concentrate on tactics, techniques, technologies and procedures. These efforts serve as building blocks for the experimentation process, and culminate in a large-scale Advanced Warfighting Experiment. The phases build on information gathered in the limited objective experiments and previous phases, as well as ongoing research, such as limited technical assessments, that examine a specific technology to determine if it is useful with regard to specified future tasks. For example, limited technology assessments have been conducted on non-lethal rigid foams, a mobile counter-fire system, and an armored mortar system. Recently conducted and projected experimental phases of the five-year plan are:

- Capable Warrior, begun in 1999, and currently in process: This ongoing experiment, which began in 1999, examines whether a sea-based Marine Expeditionary Force can conduct maneuver throughout an extended littoral battlespace by employing sea-based command and control, naval supporting fires, and responsive logistics. Through 2001, it will thoroughly explore the requirements for making the concept of *Expeditionary Maneuver Warfare* a reality,

and it already included participation in Millennium Challenge 2000, the joint experiment overseen by Joint Forces Command in September 2000.

- **Coalition Warrior:** After Capable Warrior is completed in 2001, Marine Corps experimentation will continue with Coalition Warrior in 2002–2003. Coalition Warrior will examine Marine Expeditionary Force operations in the context of a future coalition and address associated interoperability issues. It will be conducted in concert with Joint Forces Command and will explore the Marine contribution to the *Joint Vision 2020* concepts of dominant maneuver and precision engagement.
- **Millennium Warrior and Cyber Warrior:** These experimental phases will be conducted in a series following the completion of Coalition Warrior. Respectively, they will examine Expeditionary Maneuver Warfare in a smaller-scale contingency and against asymmetric threats across the spectrum of conflict.

The results of the Warfighting Lab's experiments are already changing the way Marines fight. For example, valuable small-unit wisdom derived from the various field experiments has been distilled in booklets on practical tactics, techniques, and procedures called X-files. These manuals are available to Marines and soldiers who may be called upon to conduct military operations in urban terrain, whether in the context of a major theater war or during peacekeeping or humanitarian assistance operations.

The Marine Corps explores longer-term transformation challenges through a series of RMA wargames called Project Ellis. These wargames address the long-term future of amphibious assaults and expeditionary operations ashore. Conducted at the Marine Corps War College, they focus on the 2020 timeframe and are intended to aid in preparation of future Marine Corps advanced warfighting experimentation on expeditionary operations.

AIR FORCE

The Air Force's new vision, *America's Air Force: Global Vigilance, Reach and Power*, is the aerospace answer to the *Joint Vision 2020* challenges and is designed to provide the nation with an integrated aerospace force. People are its foundation, aerospace is its domain, and the key to dominating this domain is the Expeditionary Aerospace Force (EAF). The core competencies needed by the EAF for such domination remain aerospace superiority, information superiority, global attack, precision engagement, rapid global mobility, and agile combat support. The Air Force views transformation as a sustained and determined effort that focuses on developing and fielding critical future capabilities, ensuring that America keeps the key asymmetric advantage of aerospace power vis-a-vis all potential adversaries.

In the place of the Cold War construct of fighter wing equivalents, the Air Force is reorganizing many of its combat forces into ten Air Expeditionary Forces (AEFs) that are versatile, tailorable, and highly responsive. Each AEF will be capable of deploying a full spectrum of air-to-air, air-to-ground, command and control, and support capabilities. This restructuring involves organizational, cultural and operational changes designed to improve management of global engagement activities and to enhance the Air Force's warfighting capability. AEFs will be able to sustain operations with a reduced forward-deployed footprint by exploiting the seamless integration of information support and weapons technologies.

In the future, the Air Force will integrate all of these efforts in an operational concept that allows the Joint Forces Air Component Commander (JFACC) to command and control forces from CONUS, while airborne, or in the regional theater. The JFACC will have the same comprehensive awareness of the ground and naval picture as the other component commanders—and vice versa. Air assets will be linked to the network in the same way that naval and ground assets are. The JFACC will understand the information infrastructure of the adversary force and political system, and will be able to update, re-task, and retarget platforms and weapons in flight.

The Air Force's efforts to produce transformed forces are supported by Air Force research laboratories, advanced concept technology demonstrations, and battlelab research and development efforts. Air Force battlelabs have the mission of rapidly identifying and proving the worth of innovative and revolutionary operational and logistics concepts with near- to mid-term applications. Battlelab insights permit the Air Force to reach investment decisions more quickly and organize, train, equip, and program more effectively. The six battlelabs are: Air Expeditionary Force, Command and Control, Force Protection, Information Warfare, Space, and Unmanned Aerial Vehicle.

Examples of successful battlelab initiatives are the Precision Targeting with Predator and the JSTARS Battlespace Imaging. These exploratory efforts had an impact on Air Force operations in Kosovo as Predator and JSTARS operators worked together with the Combined Air Operations Center to track and engage fleeting targets such as enemy surface-to-air missiles and armored combat vehicles. OPERATION ALLIED FORCE in Kosovo provided the Services with the best possible real-life laboratory for validating future operational and organizational concepts: actual armed conflict. The Air Force is following up on the many lessons learned in the crucible of combat as it continues to develop and refine its operational concepts for several critical missions.

The Air Force also experiments more broadly with global engagement capabilities in its annual large-scale Expeditionary Force Experiment (EFX). These annual events build off of a series of experiments that conclude in a two-week advanced warfighting experiment. The first of these near- and mid-term transformation efforts was conducted in September 1998.

A Joint EFX (JEFX 2000) was conducted in conjunction with JFCOM's Millennium Challenge in September 2000, and focused on exploration of the capabilities needed to provide agile combat support to expeditionary aerospace forces. Technology and process initiatives were examined to enable the Combined Forces Air Component Commander and staff to sustain and protect expeditionary aerospace forces. Exploration examined providing command and control operators with the tools necessary to fully integrate friendly forces' order of battle information into the air campaign assessment, planning, and execution process against critical mobile targets such as theater ballistic missile launchers and surface-to-air missiles.

The Air Force uses two wargame series to inform its mid- and long-term transformation efforts. The annual Global Engagement wargames explore the mid-term implications of transformed air forces. These wargames are intended to illuminate the potential capabilities of joint air and space power in the 2008 timeframe and beyond. The Aerospace Future Capabilities Wargames test alternative force structures in the long-term warfighting environment of 2020–2025. To date, the results of these Air Force wargames have underscored the imperative for fully integrating space-based capabilities into the nation's air, land, and sea operations.

JOINT CONCEPT DEVELOPMENT AND EXPERIMENTATION

As the executive agent for joint warfighting concept development and experimentation, U.S. Joint Forces Command (USJFCOM) ensures that the joint warfighter's voice is heard and advocates joint alternatives for meeting key operational needs. Working closely with the Services to leverage their robust transformation efforts, USJFCOM is responsible for the joint concept development and experimentation that is a critical source of the ideas and innovation necessary to transform the Department's military forces.

JFCOM's concept development and experimentation plan is organized around three axes that correspond to the near-, mid-, and far-term: continuously enhancing the current force; realizing *Joint Vision 2020* capabilities; and transforming the force for the Revolution in Military Affairs. The first axis, enhancement of the current force, is aimed at the 2000–2010 time frame and focuses primarily on achieving near-term improvements to existing forces that constitute critical prerequisites for more achieving longer term transformation goals. The near-term experimentation agenda revolves around improving joint doctrine and organization, logistics, command and control, intelligence, surveillance, and reconnaissance capabilities. Particularly important near-term findings from experimentation to date highlight the need for:

- Joint Task Force Headquarters and Joint C4ISR: providing a joint headquarters organizational structure and architecture enabling fully joint operations with synchronized joint battlefield operating systems, including joint management of all intelligence, surveillance, and reconnaissance assets available and a shared real-time common, relevant operational picture between the Joint Task Force Headquarters and subordinate units.
- Focused Logistics Enabling Early Decisive Operations: using total asset visibility, distributed basing, and other concepts to provide right-sized logistics support from minimal infrastructure so as to decrease the logistics requirements per unit of combat power and enable sustainment of joint forces across extended operational distances.
- Attacking Critical and Time Sensitive Targets: using streamlined sensor-to-shooter data links and dynamic control of loitering weapons to rapidly identify, target, and engage highly mobile, long-range systems that are capable of delivering nuclear, chemical, or biological warheads and which threaten our staging and operational bases.

The second axis of JFCOM's campaign plan, realizing the *Joint Vision 2020* force, looks beyond the systems and capabilities of the current force to determine what should begin to replace them between 2010 and 2020. These concept development and experimentation efforts focus around expanding and refining JFCOM's Rapid Decisive Operations (RDO) concept. The challenge of the RDO concept is to enable U.S. forces to accomplish their operational and strategic objectives in days and weeks across global distances against a competent regional adversary. This adversary may possess numerical superiority, an ability to shape the battlespace due to having a home field advantage, advanced anti-access capabilities, a competent information operations capability, a willingness to sustain and inflict significant combatant and non-combatant casualties, and a significant ability to learn and adapt. JFCOM expects that this notional adversary will attempt to deny us access to the theater of operations and, if that fails, then attempt to draw U.S. forces into a protracted war of attrition.

The RDO concept assumes the possibility of quickly prevailing against a formidable regional adversary. Doing so will require achieving the near-term experimentation objectives identified above and by more broadly transforming joint operations from today's operational-level synchronization of the Service components' dimensional campaigns to a coherently joint campaign integrating joint tactical action across Service component lines. Through joint tactical action the total force can more effectively combine our asymmetric advantages of standoff precision engagement, highly agile close combat maneuver, and tailorable information operations to achieve maximum effect on the enemy.

To effectively synchronize tactical operations and achieve a rapid and decisive outcome for the campaign the operational level of war needs to be coherently joint. The level of knowledge and proficiency required for 21st century operations will require an operational-level headquarters that is joint by nature. Coherently joint command and control will allow us to achieve a level of effectiveness greater than that possible with today's practices. If this coherent jointness is combined with national expertise and capabilities through inter-agency coordination at the operational-level headquarters, then we will be able to execute an effects-based operation that devastates the enemy without having to conduct an extended campaign.

The RDO concept is the centerpiece of JFCOM's near- and mid-term concept development and experimentation efforts. RDO was the focus of Millennium Challenge 2000, the first major joint field experiment organized by JFCOM this past year. JFCOM successfully integrated the efforts of the four major service experiments under the direction of a joint force headquarters provided by JFCOM. This event demonstrated that we can synthesize both Service and Joint Experimentation objectives in a single, integrated event. Additionally, Millennium Challenge 2000 represented a major paradigm shift in how we structure and conduct warfighting experimentation. We are now exploring not only how well the various Service initiatives work, but more importantly, how well they work together.

Millennium Challenge 2000 had three, uniquely joint experiments imbedded in it: Precision Engagement, the Joint Deployment Process Initiative, and Information Superiority:

- **Precision Engagement Experiment:** In cooperation with U.S. Forces Korea, this experiment explored providing in-theater force commanders with the ability to reach back to powerful planning and analysis capabilities in the United States. These reach-back capabilities exceed those that could be deployed to the theater and reduce the number of personnel and amount of equipment that must be deployed, sustained, and protected.
- **Joint Deployment Process Initiative:** This experiment identified near-term actions we can take to significantly reduce the time required to conduct crisis action planning, specifically the development and validation of force requirements in a Time Phased Force Deployment Data (TPFDD), during contingency operations. This experiment identified process improvements to achieve a 72-hour TPFDD development and validation time standard for the first seven days of deployment flow during Crisis Action Planning.
- **Information Superiority:** The third joint experiment under the umbrella of Millennium Challenge 2000 explored using collaborative planning tools that reach across not only the levels of command but also across operational functions. These collaborative tools dramatically improve the speed and quality of planning and decision-making, and have great potential for transforming

our current hierarchical decision-making processes into a streamlined, compressed process that will enable us to achieve decision superiority.

The main joint experimentation effort for FY 2001–2004 will also focus on refining and assessing the Rapid Decisive Operations concept and its relationship to the core competency work being conducted by the Services. Upcoming near-term experimentation includes Unified Vision 2001, which will refine the command and control construct for the RDO concept as well as exploring the value of including an inter-agency component in a joint task force. Unified Vision 2001 will also enable the follow-on major joint field experiment Millennium Challenge 2002. This will examine what is required to conduct a rapid, decisive operation against a challenging regional threat in 2005–2010. Just as Unified Vision 2001 will enable Millennium Challenge 2002, so Unified Vision 2003 will enable Olympic Challenge 2004. The culminating major joint integrating field experiment on the second axis, Olympic Challenge 2004, will portray a likely 2015 scenario and will be a cornerstone for the concept development and experimentation effort to implement *Joint Vision 2020*. The goal of the Millennium Challenge 2002 and Millennium Challenge 2002 is to produce actionable recommendations for the Department on immediate requirements for beginning the process of realizing *Joint Vision 2020* force capabilities.

In its two years as executive agent for concept development and experimentation JFCOM has built an impressive experimentation support structure. In addition to including Service experiments as integral parts of larger, joint, experimentation events, JFCOM is also expanding its efforts to include inter-agency and multinational participation in concept development and experimentation. JFCOM is also a member of the Alliance of All Service Battle Laboratories. Composed of representatives from the four Services' battle laboratories and Joint Forces Command's Joint Warfighting Experimentation Battle Laboratory, the Alliance members developed and endorsed a charter to facilitate their experimentation activities on a collaborative basis. When the members exchanged information concerning individual and collective experimentation programs and proposed more than 20 topics for potential future collaborative experimentation.

In addition to cooperation and collaboration with the Services, JFCOM ensures the widest possible participation by other combatant commands. Joint experimentation efforts include functional and geographic commands from the very outset. For example, in addition to its work with U.S. Forces Korea on precision engagement during Millennium Challenge 2000, Joint Forces Command continues to support and leverage U.S. Pacific Command (USPACOM) experimentation on a Joint Mission Force. Several of the joint intelligence, surveillance, reconnaissance, and command and control initiatives under development by JFCOM are included in the Joint Mission Force experimentation series. USPACOM's experiments will continue to complement the work of Joint Forces Command by providing valuable insights into the operational application of advanced technologies to near-term, real-world warfighting challenges. Additionally, the multi-national dimension of U.S. PACOM's experimentation program will provide valuable insights into issues that must be resolved to ensure that emerging warfighting concepts are feasible within a coalition environment.

JFCOM also works closely with the Department's science and technology community. For example, JFCOM evaluates the potential of all active Advanced Concept Technology Demonstrations (ACTDs) for inclusion in ongoing concept development and experimentation activities. ACTDs are an effective program for rapidly assessing the military utility of emerging technologies. A pre-acquisition activity, the

ACTD process provides the warfighter an opportunity to assess a new capability and determine its military utility before major procurement decisions are made. The program seeks to facilitate rapid modernization of our military capability by introducing new technologies into the force structure within two to three years from inception of each program. By employing leading-edge concepts and facilitating application of mature advanced technologies, the ACTD program helps to identify problem areas, develops innovative solutions and provides new operational capabilities that will make a difference to the warfighter. Joint Forces Command evaluates the potential of all active ACTDs for inclusion in ongoing concept development. During FY 2000, Joint Forces Command sponsored eleven ACTDs that were in various stages of development, including Joint Logistics, Global Hawk UAV, Theater Air Missile Defense Interoperability, Battlefield Awareness and Data Dissemination, and Joint Theater Logistics.

The third axis of JFCOM's joint concept development and experimentation effort is focused on 2020 and beyond, and considers those concepts and technologies that have the potential to effect revolutionary transformation of the joint force. To support this third axis of experimentation, Joint Forces Command has established an Innovation and Transformation Center that has partnered with key components of the defense science and technology community, the Department of Energy, selected industries, and the academic community to begin an exploration of highly advanced technologies and concepts. In 2000, this body began its work at an initial session at the Johns Hopkins Applied Physics Laboratory, in the area of future robotic systems and the possibilities for autonomous operations. In 2001, the effort will continue with consideration of the trends and possibilities in nano-technologies, bio-centric operations, and alternative energy sources.

RAPID IMPLEMENTATION

The Department is pursuing new processes for committing resources to key emerging capabilities and promising operational concepts within the defense budget faster than the normal programming and budgeting process would allow. One such effort is the Army's Warfighter Rapid Acquisition Program (WRAP), a fund of approximately \$50 million per year used to rapidly procure relatively low-cost but high-leverage systems that performed well in experimentation, such as the Rifle-Launched Entry Munition. The WRAP effort has reduced acquisition cycle time for systems procured by an average of 12 months. The Army has used this account to implement results from its Force XXI advanced warfighting experimentation and, more recently, to defray some costs associated with converting initial brigades to the new medium weight design. The Marine Corps and the Air Force are establishing similar rapid acquisition programs, starting in fiscal year 2001 and 2002, respectively. In the future, the Department will consider whether such a rapid acquisition program is needed to rapidly implement new capabilities emerging from joint concept development and experimentation efforts.

Although the Department can take advantage of breakthrough technologies through rapid acquisition programs, it largely exploits science and technology advances through its normal acquisition processes. The concept development, experimentation, requirements and planning, programming, and budgeting system work in conjunction with the Department's acquisition programs, which are overseen by the Defense Acquisition Board. After the requirements system has generated a validated mission need, a typical major acquisition program proceeds through a series of milestone decisions until the system is fielded and operational. Throughout this process the Department continually coordinates major acquisition programs with the requirements process to ensure mission needs are being met and that, subject to

affordability and technical risk constraints, the best technology possible is integrated into the program. This process can be highly responsive to transformation requirements, as recently demonstrated by the rapid evaluation and approval of the Army's interim armored vehicle. Other leading edge programs with unique capabilities required by the warfighter also have moved rapidly through this process. The Predator and Global Hawk Unmanned Aerial Vehicles, for example, moved quickly from ACTD to the field as their value became evident both through testing and in combat during Operation Allied Force.

Transformation requires rapid implementation of doctrinal and organizational changes as well as material solutions. To ensure that the full range of recommendations from joint experimentation can be rapidly implemented, the Joint Staff intends to develop a transformation campaign plan. The plan will provide transformation guidance that outlines a strategy for the U.S. armed forces to achieve the *Joint Vision 2020* goal of full-spectrum dominance through an integrated plan institutionalizing joint task force operational capabilities as a national core competency similar to Service core competencies. It will clearly specify the roles and responsibilities of the joint staff directorates, Services, and CINCs in achieving and implementing *Joint Vision 2020*. It will reflect recent work by the Joint Staff to reform the Joint Requirements Oversight Council and the Requirements Generation System to better capture requirements that evolve from joint experimentation and assessment activities and integrate them into synchronized joint warfighting capabilities.

SCIENCE AND TECHNOLOGY

Developing new technologies that enable the development of revolutionary military capabilities is a key element of the Department's transformation strategy. New information systems, married with technological advances in other key areas including stealth platforms, unmanned vehicles, and smart submunitions, are essential to the Department's efforts to exploit the RMA.

PURSUING THE CRITICAL ENABLER: INFORMATION SUPERIORITY

Creating and leveraging information superiority is central to making the warfighting concepts embodied in *Joint Vision 2020* a reality. The key steps required to achieve information superiority are addressed in the following goals:

- Ensure the defense intelligence capabilities necessary for information superiority by modernizing collection systems, creating collaborative work environments, and creating progressive production procedures.
- Implement effective defensive programs for establishing information assurance and critical infrastructure protection.
- Build a seamless and coherent global information grid providing the underpinnings for the DoD infrastructure, taking an enterprise view of DoD networking, computing, interoperability and information assurance, and leveraging commercial technology.
- Promote electronic business/electronic commerce and business process change throughout DoD.

- Create and maintain reusable knowledge bases; attract, train, and retain a highly skilled workforce; develop core business processes that capitalize on these assets.
- Strengthen the Department's information operations, security, and counterintelligence posture. Implement a paradigm focused on active security.
- Plan and implement joint and combined end-to-end C3ISR and space integration.
- Foster development of an advanced technology plan for information superiority.

LINKING SCIENCE AND TECHNOLOGY DEVELOPMENT TO WARFIGHTING

The Department maintains a strong science and technology (S&T) program to provide options for responding to a full range of military challenges both today and into the uncertain future. Technological superiority continues to be one of the foundations of our National Military Strategy and a key characteristic of our armed forces. Through the Department's investment in S&T, we develop the foundation necessary for the Department's modernization effort, discover new technologies that produce revolutionary capabilities, and provide a hedge against future uncertainty. Tomorrow's military capabilities depend in part on today's investment in enabling technologies that can be integrated into new or existing systems and employed using new operational concepts.

The Department has a mature S&T strategic planning process for improving the S&T community's responsiveness to their warfighting and acquisition customers. Rapid advances in several key technology areas are creating options for significant increases in warfighting and support capabilities. Four publications—the new *Defense Science and Technology Strategy 2000* and its supporting *Basic Research Plan*, *Defense Technology Area Plan*, and *Joint Warfighting Science and Technology Plan*—lay out the Department's S&T vision, strategic plan, and objectives for defense planners, programmers, and those who develop defense S&T. The *Basic Research Plan* presents the Department's objectives and investment strategy for DoD-sponsored basic research performed by universities, industry, and Service laboratories. The plan presents the Department's investment in ten basic research technical disciplines. The *Defense Technology Area Plan* looks across Service and defense agency investments and describes the Department's applied research and advanced technology development programs.

The *Joint Warfighting Science and Technology Plan* takes a joint perspective, looking horizontally across the Services and defense agencies to ensure that DoD S&T programs address priority future joint warfighting capabilities. Published annually, this plan identifies 12 Joint Warfighting Capabilities Objectives (JWCOs) associated with critical capabilities needed for U.S. forces to maintain a dominant warfighting advantage. These objectives, developed by the Joint Staff in collaboration with the Office of the Secretary of Defense and the S&T executives of each Service, are focused on supporting the operational concepts of *Joint Vision 2020*.

The Department's investment in S&T is executed through a partnership among our defense agencies, Service laboratories, universities, industry, and international partners. In developing the Department's S&T program, we have developed five interdisciplinary areas that are intended to allow the Department to more fully benefit from emerging capabilities. These five focus areas are: Chemical & Biological Defense, Hardened & Deeply Buried Targets, Smart Sensor Web, Cognitive Readiness, and Information Assurance.

Partnering with industry is an integral component of several technology programs. The Dual Use Science and Technology Program (DUS&T) partners with industry to develop technologies having military and commercial applications. The Commercial Operations and Support Savings Initiative (COSSI) uses technologies already developed by industry to lower the operating and support costs of legacy weapon systems. Both DUS&T and COSSI use the Other Transaction Authority provided by Congress which makes it easier for companies unfamiliar with defense contracting to work with DoD. Title III of the Defense Production Act provides financial incentives that help industry establish or expand production capacity for critical technologies, and the MANTECH program promotes affordability by transferring military developed manufacturing processes to the commercial sector. DoD uses Cooperative Research and Development Agreements to provide a way for commercial firms to take advantage of the expertise residing at DoD labs.

A strong S&T program will provide the solid foundation for modernization that is critical to the successful transformation of the U.S. military. Keeping the S&T program focused on near-term and revolutionary warfighting capabilities requires continuing vision, cooperation among all participants, and robust resourcing to meet the challenges of the 21st century. In peace, technological superiority is a key element of deterrence. In crisis, it provides a wide spectrum of options to the National Command Authorities and commanders in chief, while increasing confidence among U.S. allies. In war, it provides an edge that enhances combat effectiveness, reduces casualties, and minimizes equipment loss. Since today's force is dramatically smaller than that at the end of the Cold War, developing affordable military technology and ensuring its rapid transition to the warfighter are critical defense objectives.

INTERNATIONAL ACTIVITIES

Coalition building is an important part of the shaping element of the National Military Strategy. U.S. forces must plan, train, and prepare to respond to the full spectrum of crises in coalition with the forces of other nations. As the Department transforms U.S. capabilities via new technologies and operational concepts, careful design and collaboration will be needed to preserve our combined operations capabilities.

NATO launched its Defense Capabilities Initiative at the Washington Summit in April 1999. This includes both a NATO-centered and a nation-centered concept development and experimentation program. The NATO-centered effort will examine ways to enable a brigade-sized headquarters to exercise effective command and control over a division-sized force, using advanced information technologies and a flatter organizational structure. Under the nation-centered portion of NATO concept development and experimentation, experiments sponsored by one or more allies will be opened for broader participation by other NATO states, helping to ensure that the Alliance works together to move into the future.

In addition, the United States Joint Forces Command established an integrated program to include allies, coalition partners, and friends in joint experimentation activities. JFCOM now has a Multinational Concept Development and Experimentation Center within its Joint Warfighting Experimentation Battle Laboratory. The purpose is to bring allied perspectives into the concept development process, thus facilitating our future ability to operate effectively within a coalition. The approach is two-fold: first, to work with willing partners to ensure the future forces of each nation will be capable of operating together; second, to ensure that future U.S. forces are capable of operating in an ad hoc coalition of partners with varying capabilities. National liaison officers from Australia and Germany are assigned to the Joint Warfighting

Experimentation Battle Laboratory, and liaison officers assigned to other initiatives within Joint Forces Command routinely participate in experimentation activities. Joint Forces Command is coordinating with selected allies for international participation in Millennium Challenge 2002 and Olympic Challenge 2004 and their supporting and enabling events, Unified Vision 2001 and Unified Vision 2003.

Each of the Services also has incorporated a program to improve force compatibility and interoperability with selected allied militaries in their concept development and experimentation programs. The Army continues to expand its multinational interoperability through a variety of bilateral and multilateral fora. The Navy has been very active in assessing strategic sealift concepts with the United Kingdom and command, control, communications, computers, and intelligence interoperability with other high-tech navies. The Marine Corps involved the Dutch, British, and Australian marines extensively in its series of Sea Dragon experiments. For its part, the Air Force has been working with the air forces of the United Kingdom and Australia in the Navigation Warfare ACTD and has invited airmen from the United Kingdom, Australia, and Canada to participate in its Joint Expeditionary Force experiments and Global Engagement wargames.

EXCEPTIONAL PEOPLE

The Department of Defense must recruit, train, and retain people with the broad skills and good judgment needed to pursue dynamic change in the 21st century. Having the right kinds of imaginative, highly motivated military and civilian personnel, at all levels, is an essential prerequisite for achieving success in the Department's ongoing military transformation. The Department is targeting its efforts at three critical populations—young people with needed skills and attitudes, innovators, and current leaders. Each of these populations must be cultivated via slightly different strategies.

YOUNG PEOPLE WITH NEEDED SKILLS AND ATTITUDES

Young people with essential technical skills and broad leadership abilities must be recruited, promoted, and retained. Advanced technology and new operational concepts cannot be fully exploited unless the Department has highly qualified and motivated enlisted personnel and officers who not only can operate these high-tech systems, but can also lead effectively in the highly complex environment of the future.

INNOVATORS

The Department is seeking to create an environment conducive to bold innovation. For one of the largest bureaucracies in the world, this is a daunting challenge. A vital part of the Department's transformation effort is encouraging real debate and the competition of ideas. DoD needs to make sure that the bureaucracy does not smother good ideas before they have a chance to develop and then compete effectively on their merits. DoD's concept development and experimentation programs must be open to new, sometimes radically different ideas from all sources, both from within and outside the Department of Defense.

As an example of recent efforts in this regard, the Department has completely reinvented the market research program associated with military recruiting and created a chief marketing officer position to oversee marketing efforts and synchronize them with the Services. The Department has expanded its market research to include those individuals who influence the decisions young people make—parents,

teachers, counselors, and coaches. Armed with these results, the Department is designing improved communications strategies. DoD has established a web-site specifically designed to appeal to adults and serve as the primary initial reference source for parents. The Department also intends to augment this advertising campaign with other communications strategies that will emphasize the importance of military service and its opportunities to adult influencers.

The Department needs to assure that key participants and leaders in technology development, concept development, and experimentation are connected to the core operational and support communities. Service experimentation programs are relatively young. As time passes, the Department must ensure that people involved in these activities have good opportunities for promotion and selection to key command positions.

THE ROLE OF SENIOR LEADERS

Senior DoD leaders—including the Secretary and Deputy Secretary of Defense, key members of the Office of the Secretary of Defense staff, and the Chairman of the Joint Chiefs of Staff, as well as the leadership of the Services—will guide the Department’s efforts to establish an environment that encourages innovation and change. The history of successful military innovation shows clearly that senior leaders must directly support a transformation effort to ensure that it receives necessary funding support and talented personnel. These leaders must help foster a culture that actively encourages innovative concept development and true experimentation in a realistic, challenging environment, with thorough vulnerability analysis and red teaming that simulates dedicated and capable adversaries. Moreover, senior leaders must be fully prepared to discover that some apparently promising new concepts and capability combinations will fail to achieve the desired results. Finally, senior leaders, both today and in the future, must also explain clearly to the public why DoD’s military transformation effort is essential, and must work closely with Congress in order to pursue significant changes in the way U.S. forces are organized, trained, and equipped.

CONCLUSION

The Department of Defense must transform its forces to remain dominant—indeed, to remain relevant—in the dynamic and highly uncertain security environment of the 21st century. During the past year, the Department has made significant strides toward realizing its vision of transformed military forces capable of full-spectrum dominance in the 2020 timeframe. The Department is transforming its forces to meet 21st century challenges through a clear strategy that integrates activities in six areas: Service concept development and experimentation; joint concept development and experimentation; rapid implementation processes; science and technology efforts; international transformation activities; and recruiting, training, and retaining exceptional people.

Each of the six elements of the Department’s transformation strategy is essential. Science and technology development is critical, but absent innovative concept and new organizational arrangements discovered through Service and joint concept development and experimentation, new technologies will not produce fundamentally new concepts for conducting military operations. Similarly, revolutionary ideas developed through concept development and experimentation will mean little unless effectively implemented by U.S. forces. Future military success also requires that the United States involve key allies and partners to ensure that it is able to operate effectively in future coalition operations. Recruiting, retaining, training, and

enabling innovators and future leaders are the necessary prerequisites for success in each of the other elements of the Department's transformation strategy.

Numerous challenges remain, but already exciting new concepts emerging from the efforts of both the joint and service communities give us a window into the future of the joint force. From concept development and experimentation to quickly integrating new systems and technologies into our forces, the Department is systematically building a process that will deliver the lighter, leaner, more agile, and more lethal force that this century's security environment demands. This force will not just be technologically superior to the opposition, it will be doctrinally and organizationally superior as well, giving it the ability to secure our interests and achieve our policy goals with less risk to our forces, to our allies, and to our homeland. The Department has moved far down the transformation path and is committed to this direction for the future as well.

PART IV

TRANSFORMING THE
DEPARTMENT OF DEFENSE

CHAPTER 12

DEFENSE REFORM INITIATIVE

The Department of Defense is changing the way it does business. Just as private industry changes its practices to be competitive, DoD is making significant effort and progress bringing competitive and best commercial practices into the business of defense. Taking advantage of lessons learned in private industry is facilitating the Department's ability to lay out a sensible road map for improving efficiency and reducing costs.

Although applying these lessons from private industry is not always easy, the urgency to do so is highlighted by DoD's aging equipment and the availability of new technology. The Defense Reform Initiative (DRI) continues its efforts to build a new and more flexible Department to address the challenges of the future. It is a long-term and comprehensive initiative designed to incorporate fundamentally new approaches to conducting business and transforming one of the world's largest organizations into a world-class operation.

BEST BUSINESS PRACTICES

DoD recognizes the advantages of adapting the best of private sector practices to its business transformation strategy. The strength of the U.S. economy lies in the flexibility of the commercial sector—in its ability to reorganize, restructure, and innovate. The Department is working to adapt the same revolutionary business and management practices that helped the commercial sector gain a competitive edge in a rapidly changing global marketplace. Examples, detailed below, include performance measures, performance contracts, financial management reform, and electronic business.

PERFORMANCE MEASURES

Results-driven performance management allows managers to track progress toward their goals, flag possible problems, and continuously improve. It also allows managers to identify priorities and allocate limited financial resources. Over the past year, the Defense Reform Office worked with DoD components to create performance measures for the various reform efforts. This effort resulted in 41 performance measures that focused on cost savings, process efficiencies, and improved customer service.

PERFORMANCE CONTRACTS

Ten DoD organizations currently are required to develop annual performance contracts outlining performance requirements and new initiatives agreed to by the organization, its customers, the Defense Management Council, and the Office of the Secretary of Defense. During January 1998, four organizations completed one-year performance contracts that covered FY 1999. These organizations, the Defense Finance and Accounting Service, the Defense Contract Audit Agency, the Defense Logistics Agency, and the Defense Health Program worked very closely with their customers and the OSD staff to

identify critical management metrics for use in the contracts. These organizations have achieved important things by using performance contracts. First, the level of communications between the organizations and their customers has improved dramatically. Second, these organizations had to carefully articulate what their business areas were, who their customers were, and assign resources to each business area.

During FY 2000, significantly improved performance contracts were developed for a total of seven organizations using lessons learned from the FY 1999 contract process. Currently, performance contracts for nine organizations have been approved by the Defense Management Council for FY 2001. For FY 2002 and beyond, all ten of the organizations will submit performance contracts with improved performance measures, building on lessons learned from reviews of previous contracts. These contracts will coincide with long range planning documents submitted by each organization in May of every year and will be a linking tool between those long-term plans and the annual budget submission.

FINANCIAL MANAGEMENT REFORM

The Department continues to transform its financial management and business practices to save money, strengthen accountability, fulfill statutory requirements, and provide superb service to DoD personnel and organizations. Financial systems are being consolidated and upgraded, controls and safeguards are being strengthened, processes are becoming increasingly electronic and paperless, and new federal accounting standards are being implemented to enable DoD to earn favorable audit opinions of its financial statements.

ELECTRONIC BUSINESS

The Department continues to advance the Revolution in Business Affairs through the application of Electronic Business (EB) strategies and initiatives. These efforts are designed to insert new management approaches and information technologies into the core processes of the Department in order to dramatically advance mission capabilities. An integral part of the Defense Reform Initiative, EB represents the new approach to streamlining and restructuring processes to meet the global and competitive challenges of the future.

The Department has a three-pronged approach to institutionalizing Electronic Business. First, DoD is completing an EB governance framework to coordinate Department-wide EB implementation and execution activities. Second, DoD is prescribing the essential policy, including roles and responsibilities, for EB via the formal DoD regulatory process. Third, DoD is maintaining the DoD Electronic Business/ Electronic Commerce Strategic Plan under the leadership of the DoD CIO that sets forth the EB vision, principles, goals and objectives. These efforts provide a sound foundation and framework that will permit effective execution of EB initiatives.

QUALITY OF LIFE INITIATIVES

Quality of life for DoD personnel is a priority. It's easier to attract well-trained personnel if good work environments are offered. It's also easier to retain employees under these conditions, and more importantly, DoD personnel deserve a high quality of life. Many of the reform efforts, therefore, are intended to increase the quality of life for DoD's most valuable resource—its people.

TEMPORARY DUTY TRAVEL

Temporary duty travel is undergoing significant changes. The old process of obtaining orders, initiating advances, and settling travel will soon be replaced by the Defense Travel System (DTS). DTS seeks to simplify and automate the DoD Temporary Duty (TDY) travel process, improve customer service levels, and reduce the associated administrative costs. The current travel process is predominately paper-based and lacks a customer focus. DTS will use leading-edge technologies to automate the TDY travel process in an electronic environment. By streamlining the travel management function, DTS is expected to provide DoD with significant annual cost savings after full implementation.

HOUSEHOLD GOODS TRANSPORTATION

The Department is working hard to improve the way in which it contracts for the movement of household goods and related services. DoD improvements include: selecting vendors based on best value rather than lowest cost; commercial-sourcing the entire household goods shipment process to a commercial relocation company; and insuring prompt and easy payment. Pilot programs have identified core improvements, which will significantly improve quality of service, reduce damage and claims, ease dealing with carriers, and directly impact morale. DoD is also working with the transportation industry and Congress to seek support.

LOGISTICS TRANSFORMATION

The commercial marketplace demonstrates that product support can be optimized and strategic advantage created by focusing on customer service, integrating supply chains, capitalizing on rapid transportation, and exploiting electronic commerce. When applied to Defense, this equates to integrated logistics chains focused on readiness and rapid service to the warfighter customer. To accomplish this fundamental transformation, the Department has developed a long-term logistics reform strategic plan, established a logistics architect to help guide the transformation effort, and started to implement new business strategies. Logistics transformation efforts include trying to satisfy customer requirements at the point of need, reducing cycle times to meet dynamic warfighting requirements, replacing large investments in infrastructure with information visibility, agility, and rapid transportation, creating robust partnerships with the commercial sector, and reducing organizational echelons. To focus Defense-wide efforts, the Department requires annual transformation plans to be submitted from the Services, Defense Logistics Agency, and U.S. Transportation Command. The Department has also identified 30 pilot programs (ten per Service) on which it is testing its initiatives to reduce total ownership cost. See Chapter 14 for more details about logistics transformation.

COMPETITIVE AND STRATEGIC SOURCING

Competition is the driving force in the American economy. It forces organizations to improve quality, reduce costs, and focus on customers' needs. The Defense Reform Initiative calls for the Department of Defense to rely increasingly on the competitive power of the marketplace to generate efficiency. Experience within DoD reveals that competition between the public and private sector to perform commercial activities consistently produces savings of at least 20 percent, regardless of who wins. Like private industry, DoD has embarked on a systematic and vigorous effort to reduce the cost and improve the performance of its support activities. Support activities will be considered for outsourcing, privatization and competition when they are appropriate for the private sector to perform. The Department plans to

study 279,600 positions between FY 1997 and 2005, with an expectation the process will save approximately \$12.4 billion dollars. The Department's commitment to achieving this goal is so strong that these projected savings have already been reallocated to other future defense priorities, including force modernization.

Examples of successful public-private competition occurred at the Sacramento, CA, Air Logistics Center and San Antonio, TX, Air Logistics Center as the result of Base Realignment and Closure, implemented in 1995. The Air Force awarded depot maintenance work from Sacramento, CA, to Ogden Air Logistics Center at Hill Air Force Base, UT. The competition combined the workload requirements for maintenance on A-10 and KC-135 aircraft and aeronautical products, including hydraulics, electrical accessories and instruments/electronics for a savings of about \$638 million over nine years. The Air Force also awarded the C-5 depot maintenance work from San Antonio to Warner Robins Air Logistics Center at Robins Air Force Base, GA, with a savings of about \$190 million over seven years. Finally, the Air Force awarded engine, module and associated fuel accessory depot maintenance work from San Antonio to Oklahoma City Air Logistics Center at Tinker Air Force Base, OK, resulting in savings of approximately \$1.8 billion over fifteen years. The end result of these initiatives is that the resulting savings were applied to other Air Force requirements.

INSTITUTIONALIZING REFORM

The Department strongly supports the Defense Reform Initiative and has established an organizational framework to give additional structure and guidance to the effort. This framework consists of a Defense Management Council to advise on reform opportunities, a coordinating group to support the council, and a DRI Office to provide oversight of the process. Using special directives, performance contracts, and other planning guidance, DoD has sought to institutionalize and provide a sustained emphasis for defense reform. This framework has helped create a Defense-wide focus on reform efforts and provides a way to address problems caused by cultural barriers and parochial interests.

CONCLUSION

While the scope of the DRI has broadened over time, the priority and need for reform is unchanged in its importance. The DRI report released in 1997 identified four pillars of defense reform: reengineer, consolidate, compete, and eliminate. Over time these four pillars have evolved and are now organized around the business processes of the Department, which include quality of life, financial management, competition, savings, infrastructure, acquisition, logistics, and cyberspace. As some reform initiatives reach their goal and other, new initiatives begin, the structure of the DRI will continue to evolve. However, the purpose and underlying principles remain the same—provide a consistent point on the horizon toward which the DoD leadership can steer as they move on the road to reform. DoD continues to meet reform challenges and make meaningful change that focuses on adopting 21st century business practices to meet the future needs of the warfighter.

CHAPTER 13

TRANSFORMING FINANCIAL MANAGEMENT

A continuing high priority for the Department of Defense is the transformation of its financial management and business practices to better meet the changing needs of customers, strengthen accountability, and fulfill statutory requirements. The ultimate goal is to integrate financial data with other management information in order to render optimum support for DoD decision-makers and U.S. military commanders worldwide.

The Department is transitioning from a decentralized structure in which many DoD organizations had their own finance and accounting systems, most of which were incompatible with one another. Once complete, this transformation will result in an integrated and centralized financial management system that reflects substantial compatibility among DoD financial and non-financial systems and adheres to the government-wide accounting requirements adopted in the last several years.

OPERATIONS AND SYSTEMS

CONSOLIDATING AND IMPROVING FINANCIAL MANAGEMENT OPERATIONS

Activated in January 1991, the Defense Finance and Accounting Service (DFAS) is the Department's pivotal change agent for improving financial management. By consolidating over 330 financial management field sites into just 26, DFAS has become better able to eliminate redundancy, facilitate standardization, improve and speed up service to customers, and increase productivity. This consolidation has produced annual savings of about \$120 million.

In October 2000, DFAS took a major step in its transformation to optimize service to DoD customers by establishing a single point of contact for each of its major business lines. The DFAS Business Evolution will focus DFAS executives on each customer's needs, improve the value of the business services provided, and establish clear accountability for each DFAS business line (e.g., Accounting Services, Military and Civilian Pay Services, and Commercial Pay Services).

Through improved systems, practices, and service, DFAS intends to become a trusted financial advisor. Strong partnerships, such as those created with U.S. Transportation Command and U.S. Special Operations Command, demonstrate DFAS's ability to provide independent and objective financial advice and innovative managerial accounting services.

TRANSFORMING FINANCE AND ACCOUNTING SYSTEMS

The Department manages two types of DoD financial management systems: finance systems and accounting systems. Finance systems process payments to the Department's military and civilian personnel, retirees, annuitants, vendors, and contractors. Accounting systems record, accumulate, and report financial activity.

As of September 2000, 76 finance and accounting systems were operating—down from 324 in 1991. The goal is to reduce this number to 37 by FY 2005 with 30 systems being operated by DFAS. The planned end result is to have nine finance systems vice the current 15, and 28 accounting systems vice the current 61.

These consolidations achieve genuine benefits. For example, by bringing all of DoD's civilian payroll accounts into a single system, 26 separate systems were eliminated and 348 payroll offices closed. In 2000, a typical civilian payroll technician handled over 2,200 accounts, compared to 380 accounts in 1991.

BEST VALUE FOR CUSTOMERS

To ensure that customers receive the best financial management value, the Department conducts an aggressive competitive sourcing program that compares government agencies and private sector companies to improve services and save money. To this end, DFAS has identified over 85 percent of its positions as available for competition and has committed to study over 6,000 positions for competitive sourcing. DFAS has completed six competitions resulting in annual savings of over \$28 million. Three ongoing studies are expected to save over \$26 million annually.

ACCOUNTABILITY AND CONTROLS

INTERNAL CONTROLS, INFORMATION ASSURANCE, AND FRAUD PREVENTION

DFAS continues to place strong emphasis on strengthening internal controls to ensure proper stewardship of DoD resources. To that end, DFAS is implementing in all of its accounting systems the U.S. Government Standard General Ledger. Automated measures for costs, performance, and other outputs also are being implemented where appropriate. These actions will provide a clear audit trail for all financial transactions, as well as enhanced safeguards for DoD resources.

DFAS and other DoD organizations continue to implement information assurance (IA) programs and fraud detection and protection measures. Efforts include corporate-wide reviews of controls to reduce vulnerability and improve employee fraud awareness training. In a major effort to upgrade internal controls, DFAS recently appointed an independent Director of Internal Review. In coordination with other DoD offices, DFAS also is developing a standardized process to prevent, investigate and prosecute fraud.

CONTRACT AUDITS

The Department continues to improve its contract payment process, with substantial progress being led by the Defense Contract Audit Agency (DCAA). DCAA has increased customer on-site support and responded decisively to the changing needs of the DoD procurement community as a result of acquisition reform. For example, as a benefit of the shift to commercial pricing practices, DCAA is performing financial analyses of data available at DoD procurement offices rather than performing audits at contractor locations. In addition, DCAA is increasing its support of important customer activities. Examples include: support of acquisition officials making major source selection decisions; support of price determinations by contracting officers in determining reasonable prices, finance terms, and industry practices—through intensive market analysis; and support of customer initiatives such as privatization of utilities and military housing. Finally, DCAA is advancing the DoD goal of paper-free contracting by providing its audit reports electronically to its customers.

MORE FAVORABLE AUDIT OPINIONS

The Department has received an unqualified (most favorable) audit opinion on the financial statements of its Military Retirement Fund each year beginning with FY 1994. The Department has not, however, received as favorable audit opinions on the annual financial statements of its major operating components. A primary reason for this shortcoming is that a significant portion of the financial data presented in DoD's financial statements originates outside the Department's accounting and finance systems. These data come from personnel, acquisition, logistics, and other feeder systems, which were not designed to produce business-type financial statements. For the most part, these systems were developed long before the promulgation of current federal accounting standards. Accordingly, much financial information has to be transferred manually from feeder systems into the financial systems. Establishing a seamless connection between these feeder systems and the financial systems that produce financial statements is a crucial step in the Department's financial management reform.

To oversee the massive effort required to make financial management systems compliant with applicable requirements, the Department has developed the Financial and Feeder Systems Compliance Process. Similar to the Department's successful handling of its Y2K computer problems, this new process is designed to ensure progress through intense involvement by top DoD leaders.

In order to accomplish fundamental financial management reform, electronic interfaces must be established between DoD financial systems and critical feeder systems. This effort will take several years and substantial resources to achieve. In the interim, however, the Department believes that significant progress can be made toward earning an unqualified audit opinion on its financial statements.

Toward this end, the Department is partnering with the Office of Management and Budget, the General Accounting Office, and the DoD Inspector General, and has identified major obstacles that must be overcome for the Department to be successful. Interim solutions to systemic problems are continuously being developed.

BEST BUSINESS PRACTICES

Critical to the transformation of DoD financial management is the adoption of successful business practices from both the private and government sectors. The goal is to make DoD business practices simpler, more efficient, and less prone to error.

TRANSPORTATION PROCESSES

Historically, commercial carriers have been dissatisfied with delays in receiving DoD payments for their services. Leaders within the DoD financial and transportation communities, and their industry partners, have adopted a commercial-off-the-shelf system to achieve the needed speed-up in payments to commercial carriers. This process fully automates orders for transportation services and associated accounting and payment transactions, and enables commercial carriers to be paid within three business days instead of the previous standard of 60-plus days. Full implementation will eliminate government-unique documentation, and reduce costs and infrastructure for DoD and its commercial partners.

ELECTRONIC EXCHANGE OF FINANCIAL INFORMATION

DFAS is promoting the paperless exchange of financial information through several initiatives, which cut customer costs by over \$24 million during 2000 alone. Electronic document management (EDM) and World Wide Web applications, such as Employee/Member Self-Service (E/MSS), facilitate access to documents, improve service, and reduce cycle times and cost of operations. Documents are stored in an electronic file and shared among DFAS activities. Converting them into an electronic format for on-line processing eliminates the printing of reports. E/MSS enables DoD personnel to make payroll changes online and print their leave and earnings statements electronically—thereby improving customer service while cutting costs. EDM also is used to process the 148,000 garnishment orders received each year, and a web-based system allows state child support agencies to submit orders over the Internet.

Electronic funds transfer (EFT) significantly reduces the cost of disbursement. Over 98 percent of DoD personnel paid by the Department have their pay directly deposited into their accounts. In FY 2000, EFT accounted for about 90 percent (\$63 billion) of the total contract dollars disbursed by the Department. New military members can now be issued Stored Value Cards at their initial training sites, to use instead of cash to obtain goods and services. Remaining values on the cards at the end of their training can be electronically posted directly into the members' military pay accounts.

Electronic data interchange is being used to send remittance information directly to vendors and to process contracts and contract modifications into finance and accounting systems. Additionally, a web-based system now enables industry to economically submit electronic invoices.

The Department now uses a single web database of basic business information from contractors that want to do business with DoD. The Central Contractor Registration (CCR) provides all DoD procurement and payment offices with a single source of valid and reliable contractor data. It also facilitates DFAS's electronic exchange of financial information.

The Department also is implementing the Defense Cash Accountability System (DCAS), through which information will be collected under one central system and distributed electronically for posting to accounting systems. DCAS will reduce the DoD disbursing cycle from over 90 days to just two days.

DEFENSE PROCUREMENT PAYMENT SYSTEM AND DIGITAL SIGNATURE

In 2001, DFAS will begin incremental implementation of the Defense Procurement Payment System (DPPS)—designed to replace all current contract and vendor entitlement systems. DPPS will rely on remote electronic feeds to streamline commercial entitlement processes.

To help achieve paperless contracting, DoD leaders—working with GAO and the Departments of Commerce and Energy—developed a software specification for a digital signature that complies with federal standards. This initiative is being piloted and will be available to all DoD personnel during the next year.

INFORMATION INFRASTRUCTURE

The DFAS Corporate Information Infrastructure (DCII) is being implemented to help modernize DFAS finance and accounting systems and to establish the information environment needed to support future

DoD financial activities. DCII will support the use of common standard data for the collection, storage, and retrieval of financial information, and simplify and standardize DoD finance and accounting transactions. DCII also will interface with DFAS migratory and legacy systems, as well as non-financial feeder systems. Included in DCII is an ambitious effort to standardize and share acquisition data. This will greatly improve the interactions between DoD procurement systems and the financial systems that process and account for payments of procurements.

PROFESSIONALLY TRAINED WORKFORCE

Today's DoD financial management workforce is well qualified and highly motivated, but the future workforce must be even better qualified. Changes in financial management requirements and technologies will place new and evolving demands on that workforce. In cooperation with the American Society of Military Comptrollers, the Department has initiated a new Certified Defense Financial Manager Program specifically geared toward DoD financial managers. This enhanced training, coupled with the validation of competence that comes with a formal certification program, will better position the Department to meet future financial management challenges. In addition, the Department has entered into an agreement with the U.S. Department of Agriculture Graduate School to present a five-day enhanced financial management training class. Over 60 classes are being offered to over 2,000 DoD financial management personnel a year.

CONCLUSION

By integrating the best of private and government practices, overhauling operations and systems, and skillfully exploiting advanced technologies, the Department is transforming DoD financial management to provide responsive, professional finance and accounting services. Further information on this transformation is in the Department's Financial Management Improvement Plan, available at <http://www.dtic.mil/comptroller>.

CHAPTER 14

ACQUISITION AND LOGISTICS REFORM

Acquisition and logistics reform initiatives are designed to help DoD achieve its vital goal of providing modern, high performance weapons systems and support to America's fighting men and women in less time, at lower cost, and with higher performance, than has ever before been the case. Congress directed the Department of Defense to identify key additional steps the Department could and should take to build on the reforms of the previous five years. This chapter provides highlights of several of the key studies chartered in response to Congress' direction in Section 912(c) of The National Defense Authorization Act for Fiscal Year 1998. In addition to those highlights, the chapter provides a range of additional initiatives that have been or will be launched by the Department. Taken together, these efforts represent the Department's vision of the future acquisition and logistics environment.

The Department's strategy hinges on having acquisition policies and practices that ensure faster, better, cheaper access to the tools men and women in uniform will need to prevail in an era of new, highly unpredictable security challenges. DoD faces an array of threats including state and non-state adversaries who would use nuclear, biological, and chemical weapons against forward deployed forces or the United States; pockets of actual or potential regional instability; and transnational dangers, including information operations against U.S. critical infrastructure and illicit drug trafficking. The Revolution in Military Affairs (RMA) articulates the military and strategic requirements associated with such a dynamic international security environment. Through the RMA the Department will harness new and emerging technologies as quickly as possible to provide U.S. forces greater military capabilities through advanced concepts, doctrine and organization so they can dominate any future battlefield.

THE REVOLUTION IN BUSINESS AFFAIRS

The pre-requisites to achieving the goals of the RMA are many and cut across all facets of the Department of Defense, particularly the arena of acquisition, logistics and technology. Yet, despite the now widely accepted precepts of the RMA, the Department continues to rely on acquisition processes, organizations, and infrastructure largely developed in the years following World War II. Moreover, the Department continues to face a limited investment budget constrained by a relatively stable topline budget, and squeezed by increased operations and support costs from aging weapon systems.

In short, in order to meet the requirements of the RMA, it is equally important that the Department also continue waging a successful Revolution in Business Affairs (RBA).

To be sure, the RBA at the Department has been underway for several years and remains among the highest priorities of the Department's civilian and military leadership. Its primary focus has been on the following three top-level goals and corresponding objectives:

Goal 1. Field high-quality defense products quickly; support them responsively.

Objective. Reduce the average acquisition systems cycle time (measured from program start to initial operating capability) for all Major Defense Acquisition Programs (MDAPs) that started since FY 1992 by 25 percent (from 132 months to 99 months); and by 50 percent (to 67 months) for all programs started in FY 2001 or later.

Objective. Reduce logistics response time from an average of 36 days (in FY 1997) to 18 days by FY 2000. During FY 2001, the Department is planning to define a customer wait time objective to replace the logistics response time objective. During FY 2002, a customer wait time target will be incorporated into future annual defense reports as a substitute goal beginning in FY 2003 and subsequent Government Performance and Results Act (GPRA) performance plans.

Goal 2. Lower the total ownership cost of defense products.

Objective. Minimize cost growth in major defense acquisition programs to no greater than 1 percent annually.

Objective. For fielded systems, reduce the logistics annual support cost per weapon system by 10 percent, when compared to an FY 1997 baseline of \$82.5 billion.

Goal 3. Reduce the overhead cost of the acquisition and logistics infrastructure.

Objective. Reduce the funding required by logistics and other infrastructure from 64 percent of Total Obligation Authority (TOA) in FY 1997 to 60 percent by FY 2001.

DoD has made substantial progress on these goals and objectives:

- As of September 30, 2000, all but nine MDAPs are meeting more than 90 percent of the aggregated number of cost schedule and performance goals for that program. The nine exceptions are: Advance Threat Infrared Countermeasures/Common Missile Warning System (ATIRCM/CMWS), B-1 Conventional Missile Upgrade Program (CMUP-DSUP), Utility Helicopter (CH-60S), Advanced Field Artillery System/Future Armored Resupply Vehicle (Crusader), 21st century Destroyer Program (DD-21), Global Broadcast Service (GBS), Space-Based Infrared System Program (SBIRS), Multi-Mission Helicopter Upgrade (SH-60-R), and Theater High Altitude Air Defense (THAAD) programs. A timely review of these programs is being performed in accordance with Title 10, United States Code, Section 2220(c), and appropriate determinations will be made based on those reviews. As enacted by the Federal Acquisition Streamlining Act of 1994, the average period for converting emerging technology into operating capability for all current major programs was calculated to be 115 months from program initiation dates to initial operating capability dates. As of September 30, 2000, this average period declined to 113 months. The calculation of the average period of MDAPs described above includes a significant number of older programs that were structured and developed using the traditional acquisition process. A more accurate assessment of the effects of DoD's acquisition reform efforts would be to concentrate on those programs initiated under the

new acquisition reform process. MDAPs started since 1992 have an average period of 99 months for converting emerging technology into operational capability. This reduction is due to starting more modification and upgrade programs as well as employing regulatory reform, such as specification streamlining, procurement reform, and integrated product teams to reduce cycle time.

- DoD has taken less time than its 18-day target for the average time required to provide spare parts through the logistics system, and improved asset visibility and accessibility from 50 percent (FY 1996) to 94 percent (FY 1999). These initiatives have also had a profound impact on reducing supply inventory in the Department from \$67 billion (FY 1996) to \$58.9 billion (FY 1999) in constant dollars.
- From FY 1997 through FY 2000, DoD's average annual MDAP cost growth has been 0.1 percent, -0.3 percent, 3.1 percent, and 2.9 percent, respectively. It is projected to be 3.2 percent in FY 2001.
- For FY 2000, weapon system logistics costs are \$77.9 billion (in constant FY 1997 dollars), just slightly behind the \$76.7 billion target.
- The funding for logistics and other infrastructure is 60 percent of TOA in FY 2000—2 percentage points better than the target.

All of these goals are designed to encourage innovation in the Department's acquisition and logistics systems. Seeking new and innovative ways to do business will improve readiness and accelerate modernization.

In recent years, DoD has done much to improve its acquisition practices and policies through acquisition reform. Furthermore, it has come a long way in transforming its logistics systems into integrated supply chains, driven by modern information technologies and a wide range of best business practices that have been proven in the commercial sector. For example:

- Applying new acquisition practices to five major weapons systems that were specifically identified by Congress yielded savings as high as 50 percent over previous official cost estimates and most were fielded or are scheduled to be fielded faster than DoD's normal acquisition time of 8 to 12 years. These weapon systems included: Joint Primary Aircraft Training System (JPATS), Non-developmental Airlift Aircraft (NDAA), Joint Direct Attack Munition (JDAM), F-117 Engine, and Fire Support Combined Arms Tactical Trainer (FSCATT). Most important, JDAM was the first of these systems to be utilized in wartime and performed exceptionally well in the conflict in Kosovo,
- DoD is using credit cards for over 90 percent of its transactions below \$2,500, bringing the Department hundreds of millions of dollars in savings and cost avoidance.
- The Single Process Initiative, launched as a means of eliminating duplicative processes and introducing appropriate commercial-like processes at defense manufacturing facilities, has

enabled the conversion of more than 200 facilities to commercial standards and has resulted in savings and cost avoidance of over \$500 million.

- The Department is pursuing innovative acquisition practices to further integrate the civil-military industrial base. For example, as a result of a manufacturing technology initiative, circuit boards for the F-22 are being produced on a commercial rather than a military line. This kind of practice allows us to capitalize on advanced commercial technology and take advantage of large production runs.
- DoD, with the help of Congress, has dramatically altered how the Department deals with its suppliers. This has created an environment that fosters closer, ongoing communication, focuses more directly on actual performance rather than promises, and encourages the kind of supplier alliances that have become hallmarks of excellence in the commercial world.
- DoD has significantly reduced the use of detailed military specifications and standards in favor of far greater commercial performance standards, thereby reducing costs and enabling access to a wider array of the latest technologies and solutions.
- The use of Other Transactions Authority has enabled DoD to access dozens of commercial providers of cutting-edge technologies that were previously unable to do business with the Department.
- The Department has begun to aggressively pursue innovative, performance-focused logistics support strategies that are resulting in improved delivery and response times, while also enabling reductions in unnecessary infrastructure.
- DoD has reduced its acquisition and technology work force by nearly 50 percent over the last ten years. The Department completed its assessment of work force competencies that will be required in the future and DoD is adapting its education, training, and experience requirements to satisfy those competencies. In addition, the Acquisition 2005 Task Force has recommended 31 initiatives to help the Department meet two near-term challenges: retirement eligibility of nearly half the current work force by 2005; and the growing need for multi-skilled generalists to provide flexible, responsive acquisition support. DoD will begin implementing approved initiatives and propose additional legislative changes. These actions will ensure that the work force retains the size and expertise required for cost-effective management of the defense acquisition system, obtaining best-value products and services for U.S. warfighters.

These are just a few of the many dramatic changes that have taken place and continue to evolve in the Department. Despite the exceptional progress that has been made, the Department continues to face challenges in its efforts to truly transform its business and logistics practices. Pursuant to Section 912(c) of the National Defense Authorization Act for Fiscal Year 1998, a number of studies were conducted to help the Department determine areas where reform should be focused.

The studies covered a wide range of issues, to include: command, control and communications; setting weapon system requirements; the unique challenges of acquiring services as opposed to products; the

future of the Research, Development, Test and Evaluation (RDT&E) capabilities of DoD; Price Based Acquisition; re-engineering product support; and accelerating, implementing and managing change. The overarching findings of each study reinforce the necessity of significant, additional reform. For example:

- The RDT&E Infrastructure Study Team found further reductions were possible and set a goal for an additional 25 percent reduction by FY 2005 from the FY 1996 baseline. Such reductions allow DoD leadership to focus research and development dollars on critical technology issues versus infrastructure support.
- The Product Support Study Team found that the Department has not done enough to transform the logistics system. DoD can expand the use of competitively sourced support for both new and legacy systems; improve reliability, maintainability, and sustainability through continuous technology refreshment; expand the use of prime vendor and virtual prime vendor support; reengineer financial processes; better integrate supply chains; tailor supply chains; and implement complementary information systems. The Program Manager Oversight of Life Cycle Support Study Team identified 30 pilot programs to serve as platforms for demonstrating these strategies.
- The Requirements/Acquisition Interface Team recommended that interoperability be a key performance parameter, cost be included in the operational requirements document, requirements be expressed in a time-phased manner, and that cost of delay analyses be conducted as part of an integrated effort to reduce acquisition cycle times.
- The Training and Tools for Acquisition of Services Team found that DoD does not have sufficient performance-based training for acquisition of complex services.
- The Commercial Business Environment Study Team found that DoD has not done enough to accelerate cultural change. DoD needs to adopt an acceleration change model emulating best commercial practices.

This chapter focuses on the principal findings and recommendations of several of those studies, as well as additional initiatives, not directly tied to the Section 912(c) studies, that the Department has started. While each of the initiatives is beneficial in its own right, the synergy among them is both powerful and central to their real success. Indeed, even as each study team identified challenges—and developed action plans for meeting those challenges—it is clear that no one aspect of the acquisition or logistics system alone can produce the results needed if DoD is to meet its most fundamental missions.

The integrated perspective provided by the studies conducted under Section 912(c), more than anything else, makes clear the inextricable links among all aspects of the acquisition process—from requirements generation to technology development, acquisition, test and evaluation, and support. Thus, the Department's ongoing initiatives to accelerate change include all aspects of that process.

Moreover, the study process clarified the fact that the Department is struggling, and will increasingly struggle, to keep pace with the development and access of new leading-edge technologies. Indeed, this finding, perhaps more than any other, speaks to one of the key focus areas of acquisition and logistics

reform and the overall RBA in the technology era of today. DoD's once prominent role as the innovator and consumer of high-technology has long since been reversed. No longer is either the Department or the U.S. Government at large the driving force behind most new technology, including many critical new technologies required by the Department to meet its mission.

That technology development, including both functional technology and technology designed to support optimal business operations and support, is now led by the commercial world, where research and development has increased steadily at a rate of about 5 percent per year for more than 20 years. Conversely, U.S. government spending on research and development has dropped some 2.5 percent per year during the same period. It is clear that this trend is not going to be reversed, and that the Department must improve its ability to be a player in the development of new technology in the commercial world.

Thus, wherever possible, the Department can no longer expect the world to adapt to its practices, but must adapt its business practices and systems to those that have been proven and that are widely relied upon in the commercial world. This can be, and has been, done in ways that are fiscally responsible to the public, while protecting the unique needs of America's military.

THE ROAD AHEAD

DoD's topline goals are clear. The Department must continue reducing cycle times for new weapon systems to provide new capabilities and support the warfighter quicker than ever before. Reducing total ownership costs of weapons systems will free up precious dollars for investment in new technologies and capabilities. Rightsizing the acquisition workforce and infrastructure and adapting new ways of doing business will enable the Department to realize needed savings and efficiencies and to continue providing the men and women in uniform with the tools they need—when they need them—to achieve their military missions. Accessing leading-edge technologies often found in the commercial marketplace will increase the performance of DoD systems.

Achieving that vision requires building DoD's acquisition and logistics reform initiatives on six focus areas, each of which has its own set of outcome metrics that link to the Department's overall goals.

DOD WILL INCREASINGLY RELY ON AN INTEGRATED CIVIL-MILITARY INDUSTRIAL BASE

Although the two industrial bases have already largely merged, DoD's business practices have not kept pace with that fundamental shift. Gaining access to the global commercial industrial base will enable DoD to take advantage of the technology found in world-class commercial companies that have maintained leadership positions in worldwide commerce and, at the same time, help increase competition for the products and services DoD purchases. DoD must position itself to access commercial technology and take advantage of large, commercial production runs, thereby reducing costs through economies of scale.

Enabled by open systems architecture and repurchase reform, DoD will seek, wherever possible, to insert commercial technology and products into its new and legacy systems to improve reliability, maintainability, and sustainability through continuous technology refreshment. This means, in addition to other things, applying military specifications (MILSPEC) and standards reform (first launched in 1993) to legacy systems, while recognizing that integrating new solutions into existing systems is a complex

undertaking. By extending MILSPEC reform to legacy systems, the Department seeks to make the search for new solutions the first priority.

To achieve its goal of civil-military integration, DoD will seek the support of Congress. In addition, the Department has already begun to develop a series of policy changes focused on expanding previous reforms and continuing the Department's efforts to eliminate non-value-added government-unique processes and policies in favor of proven, performance-based, commercial standards. For instance:

- In October 1999, the Department launched a comprehensive review of the status and future requirements in the area of specifications and standards reform.
- The Department issued new property disposal language as a Federal Acquisition Regulation (FAR) final rule. Also, significant additional changes for FAR, Part 45, Property Rewrite, are in process.
- The Department is conducting a pilot program to test the application of commercial packaging specifications to military requirements.
- The Department will seek to significantly expand the use of commercial services contracting, and competition including public-private competitions in determining the most efficient and effective means of service delivery.

Each of these initiatives is designed to eliminate unnecessary and costly government-unique requirements and to expand the Department's access to commercial providers who are often unable to do business with the Department because of those government-unique requirements.

Leading indicators of change in this area include increasing the dollar value of FAR, Part 12, contracts and firm-fixed price competitive R&D contracts.

DOD WILL ADOPT AND RELY ON A NEW APPROACH TO SYSTEMS ACQUISITION WHERE PRICE AND SCHEDULE PLAY A KEY ROLE IN DRIVING DESIGN DEVELOPMENT AND SYSTEMS ARE REVIEWED BY PORTFOLIO

The warfighter must be in a position to place a dollar value on improved capability and choose among potentially dissimilar alternatives. Warfighter requirements must be clearly stated and address a validated need. In the new systems acquisition environment, key acquisition and long term funding commitments will not be made until technology is mature and risks are far better understood (and strategies to mitigate them better developed) than is currently the case. When feasible, adopting a time-phased, incremental approach to systems development, allows the Department to more quickly field new technologies. This will also enable the acquisition of products on the basis of overall price and performance, as is the rule in the commercial technology world. The end result can be newer technology in the hands of the warfighter sooner; a wider, more competitive marketplace from which to purchase needed solutions; and fewer dollars idling in the acquisition pipeline.

The Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 3170.01A has already been updated to suggest time-phased requirements when feasible. The CJCSI further mandates that interoperability be a

key performance parameter and that cost be addressed in the operational requirements document as an affordability issue. The Department has also rewritten its guidance on systems acquisition. This rewrite addresses evolutionary acquisition, increased technical maturity before starting acquisition programs, integration of acquisition and logistics early in the process, and additional operational assessments. However, to be fully effective, these changes will need continued support from Congress.

Leading indicators of change include planned evolutionary acquisition strategies and the number of MDAPs with cost as a key performance parameter.

DOD WILL TRANSFORM ITS MASS LOGISTICS SYSTEM TO A HIGHLY AGILE, RELIABLE SYSTEM THAT DELIVERS LOGISTICS ON DEMAND

The Department spends more than \$80 billion annually on logistics but the logistics performance (e.g., responsiveness, service, value, readiness) does not match this investment. Logistics reform must move toward performance-based support and link modern warfighting and modern business practices. The commercial marketplace demonstrates that product support can be optimized to create a strategic advantage by focusing on customer service, integrating supply chains, capitalizing on rapid transportation, and exploiting electronic commerce. When applied to DoD, this equates to integrated logistics chains that focus on readiness and rapid service to the warfighter customer. Providers would be selected competitively, based on best value. Long-term partnerships would be formed with a subset of preferred providers.

Instead of continually focusing on product procurements, logistics operations will increasingly rely on the purchase of services. This will be structured to make the supplier responsible for keeping the product technologically current, thus providing the warfighter with continuously improved capability and readiness.

To accomplish this fundamental transformation, the Department has developed a long-term logistics reform strategic plan, established a logistics architect to help guide the transformation effort, and begun the process of implementing new business strategies. New strategies include Defense Logistics Agency prime vendor total systems performance requirements, electronic commerce, and increased Departmental focus on modern information technology to reduce the costs and support for the Department's aging weapons systems. To reduce total ownership cost, the Department has also identified 30 pilot programs (ten per Service) on which it is testing its initiatives. Most of the pilots will achieve or exceed the 20 percent stretch goal with increased readiness, as more and more initiatives are implemented. Thirteen of these programs have already achieved this goal within the past six years, and average savings are 18 percent, up from 10 percent a year ago. These pilot program initiatives will continue to be leading indicators of change.

To make this new vision of modern logistics a broader reality, support from the Congress is needed, particularly in the area of removing restrictions on competitive sourcing and providing necessary financial flexibility to enable the Department to optimize its support operations. It also requires the clear recognition that the Department's ability to fully reap the benefits of many of its strategies hinges, at least in part, on a concurrent willingness and ability to make the requisite infrastructure and personnel adjustments.

DOD WILL REDUCE ITS ACQUISITION INFRASTRUCTURE AND OVERHEAD FUNCTIONS TO INCREASE EFFICIENCY

With increased reliance on the commercial products, technology, and competitively sourced products there will be excess capacity in the acquisition infrastructure. Because DoD does not retain non-critical excess capacity, it will streamline its management and financial information systems through large-scale adoption of proven commercial business processes in information technology and financial management.

DoD will continue to restructure labs, research and development centers, and test facilities to further encourage intra- and inter-Service efficiencies. DoD faces the challenges of a high percentage of its work force nearing retirement eligibility, the downsizing of recent years, and the changing demands caused by a rapidly evolving technology landscape. Therefore, the Department has also launched significant initiatives focused on the work force skills needed for the next century and how best to shape and mold the work force to meet those requirements.

DoD is working on initiatives to upgrade its facilities or divest itself of additional capacity in order to free resources for modernization. In addition, DoD is moving toward privatizing utilities where that is feasible. Finally, DoD needs at least two additional rounds of Base Realignment and Closure (BRAC) to divest itself of non-critical excess capacity. As always, the Department will need help from Congress to achieve its goals.

RDT&E infrastructure cost reduction is a leading indicator of change and DoD has targeted a 25 percent reduction by FY 2005.

THE DOD WORK FORCE WILL BE TRAINED WITH THE REQUISITE SKILLS TO OPERATE EFFICIENTLY IN THIS NEW ENVIRONMENT AND WILL PERPETUATE CONTINUOUS IMPROVEMENT

In order to operate in this new environment, the acquisition work force must understand commercial business practices and how to learn about and acquire both products and services. Individuals and their work teams will continue to be educated through Defense Acquisition University (DAU) courses, the latest technologies that bring education to the work force, and courses available outside the Department. This will increase the Department's training throughput and help ensure that the work force is receiving the appropriate balance of commercial- and government-unique training competencies. Each practitioner's knowledge will be continually refreshed through continuous learning, with particular focus on moving from transaction-driven work to the management of processes.

The Department has instituted a continuous learning policy for the key acquisition and technology work force, mandating that each member of that work force receives at least 80 hours of continuous learning every two years. In addition, the Department is expanding the scope of coursework available through computer-based training and distance learning offered by the DAU and outside sources. The Department provided all members of the key acquisition and technology work force a catalog of available coursework as well as a core curriculum that includes a series of training modules, most of which will be available through distance learning technologies that focus on key areas of change.

More than 2,200 members of the acquisition workforce have completed a new web-based course on commercial supply chain management, developed at no cost to the Department by the National Contract Management Association (NCMA) in partnership with the National Association of Purchasing Management (NAPM). The Department also offers senior military and civilian acquisition leaders a special commercial practices immersion course provided by the Darden School of Business at the University of Virginia. The Department launched a new offering from NCMA/NAPM, which focuses on the acquisition of services in a performance-based environment and has more than 600 students enrolled. The Department has also initiated a full review of its acquisition management courses (including a restructured approach to the Department's program management training) and has recently started a major initiative to define the future acquisition work force and develop a strategy to ensure that its career development program will be synchronized with future work force requirements.

One leading indicator of change is how much of the acquisition work force is taking continuous education in identified focus areas. DoD aims to have 100 percent of the acquisition work force participating within one year of the establishment of focus area courses.

DOD WILL INSTITUTIONALIZE CONTINUOUS IMPROVEMENT OR CHANGE MANAGEMENT THROUGHOUT THE DOD ENTERPRISE TO ENSURE A VIRTUAL LEARNING ENVIRONMENT

World-class companies have adopted systematic change models, which have enabled them to become more efficient and continue to maintain their competitiveness in the global marketplace. Utilizing a systematic model allows companies to implement change initiatives quickly and efficiently across their organizations and to maintain a culture of continuous change. DoD will routinely use a proven enterprise change model to rapidly implement the business process changes required to better support the warfighter. To accomplish this goal, the Department and its leadership will:

- Provide commitment and continuing advocacy of change. Leadership provides the vision and goals, and recognizes change agents.
- Establish action acceleration workshops to identify and train change agents.
- Initiate rapid improvement teams to change specific processes and cultures.
- Continue to expand the support provided by the newly-established change management center, integrating these efforts with the new DAU corporate university thrust.
- Ensure accountability of the business unit manager and the teams to implement and achieve bottom line objectives of the enterprise and business unit.

Enterprise outcome-driven performance scorecards will be developed for each performance outcome goal and used to measure progress against established outcome-driven performance baselines. The scorecards will measure:

- Attainment of DoD desired performance outcomes.

- Customer/supplier/employee satisfaction.
- Achievement of reform targets.

Leading indicators of change in this area will be measured by the annual acquisition reform survey. For FY 2001, DoD has targeted a 50 percent increase in the extent to which acquisition reform initiatives are positively affecting people's jobs and a 10 percent decrease in neutral or negative support for reform from management.

INTEGRATING ENVIRONMENT, SAFETY, AND OCCUPATIONAL HEALTH REQUIREMENTS INTO THE ACQUISITION PROCESS

In support of its transformation efforts in system acquisition and logistics, DoD is reducing pollution, work force exposure to health risks, and accidents associated with weapons systems peacetime operations, training and maintenance. Increasingly strict international, national, and local environmental regulations make it a necessary design consideration to reduce pollution produced by DoD systems during normal operation. For example, excessive air pollution levels in certain areas of the country make it necessary for the Department to seek ways to field new weapons systems which produce less pollutants than those of the systems that will be replaced. Similarly, international standards for ship pollution require DoD to design ships that strictly control their discharges of waste. Other regulations limit the amount of waste release permissible during weapons systems maintenance procedures and limit the amount of chemicals to which DoD personnel may be exposed during operations and maintenance. To address these requirements and demonstrate DoD's commitment to protecting the environment and the health of its personnel, DoD policies and practices encourage weapons systems designers and engineers to develop systems that achieve performance objectives (e.g., high thrust, stealth, enhanced firepower), while minimizing environmental, safety, and health risks. Trying to enhance performance while providing the greatest possible protection for people and the environment is often difficult and frequently involves trade-offs. However, it is essential that the Department be able to operate, maintain, and deploy the latest weapons systems designed to protect the safety and security of the Nation.

When it comes to protecting the safety of DoD personnel, preventing all accidents is the paramount goal. In DoD, safety experts are part of the weapon system design team. Every effort is made to reduce accident rates and to field technology that enhances the safety of existing systems.

Several of DoD's new systems are being designed to reduce pollution, lower worker exposure, and enhance safety. For example, the T-45, the Joint Strike Fighter, the RAH 66 Comanche, and the Advance Amphibious Assault Vehicle all have efforts underway to minimize or eliminate the use of heavy metals such as chrome and cadmium. Similarly, ship designs for the LPD 17, the DD 21, and auxiliary cargo ships emphasize minimizing discharges to ensure global access to ports. Upgrades to older helicopter systems such as the H1 and H60 have made enhancing safety a key goal. However, these achievements are ultimately designed to enhance DoD's ability to deploy its systems.

TEST AND EVALUATION

Test and evaluation (T&E) is an integral part of the acquisition process and an important element of the Department's vision to accelerate its acquisition and logistics reform efforts with a new set of initiatives focusing on outcome driven performance. Moreover, the new responsibilities of the Director of Operational Test and Evaluation (DOT&E) support the transformation efforts by providing the necessary focus to mandate the early use of T&E for discovery to contribute to reduced acquisition cycles and more expeditious fielding of warfighting capabilities, as well as to assure the warfighter that the capability is better.

New responsibilities of the DOT&E include oversight of the: DoD T&E Infrastructure including the Major Range and Test Facility Base, Central Test and Evaluation Investment Program, Joint Technical Coordinating Group for Munitions Effectiveness, Joint Technical Coordinating Group on Aircraft Survivability, Threat Systems Office, and Precision Guided Weapons Countermeasures Test Directorate. In addition, the DOT&E has become a member of the Board of Directors for Test and Evaluation with the Service Vice Chiefs. The DOT&E is now a member of the DoD Planning, Programming, and Budgeting System Program Review Group, and invited to participate in the Defense Resources Board (DRB) deliberations when modernization issues are addressed. These new responsibilities have already facilitated a more integrated test and evaluation process; emphasized T&E involvement in science and technology activities; encouraged T&E after weapons deployment; and allowed promotion of Service/OSD Integrated Test Teams. The responsibilities also promote earlier identification of operational strengths and weaknesses of weapons technologies during developmental T&E. In addition, the DOT&E is now in a better position to promote the use of modeling and simulation to supplement and improve the efficiency of test and evaluation. The DOT&E has already been successful, through the DRB and related mechanisms, in redressing some of the critical Service T&E manpower and funding shortfalls.

The T&E business area within the DoD has been a full partner in the downsizing and streamlining initiatives of the 1990s. Since 1990, the T&E business area has reduced government personnel by more than 40 percent, and T&E institutional budgets by 30 percent. Over this same period, developmental test and evaluation workload has remained essentially stable, and operational test and evaluation workload has significantly increased. As a result, T&E is not sufficiently funded or manned to effectively and efficiently address the test and evaluation challenges of the next decade. To be responsive to the philosophy of early use of T&E for discovery of military effectiveness and suitability issues, T&E personnel will be overextended. While the principles of the faster, better, cheaper acquisition reform philosophy are sound, the implementation which has stretched the resources of T&E has also resulted in a rush-to-failure mode for some acquisition programs. There is now a Department-wide T&E strategic planning initiative to chart a course for the future looking out 15 years and to provide planning guidance for the FY 2004 budget process. This planning effort will address issues, such as work force levels, process improvements, best value with full cost visibility, technology challenges, and encroachment concerns.

CONCLUSION

Acquisition and logistics reform represents a significant cultural change for the Department's acquisition, logistics, and technology work force. Given the size and complexity of the Department, the changes realized in just five years are remarkable. Moreover, as the results indicate, DoD's internal measures

clearly document significant progress as well. Therefore, the Department is focused on both additional change and a series of initiatives designed to provide tools needed by the work force to carry out its tasks effectively.

DoD is primed to accelerate its acquisition and logistics reform efforts with a new set of initiatives designed to produce even greater outcome-driven performance improvement results well into the next century. To make this happen, DoD will become a learning organization that embraces best practices, empowers its work force, and achieves optimal solutions at affordable costs in support of the warfighters.

It will take commitment and hard work across the Department's business communities to accelerate progress. The Department must successfully adopt performance-based, commercial business processes and practices to field the most technologically advanced, best-equipped, and most mission capable fighting forces in the world to come. Given the progress to date, there is every reason to believe that the Department will achieve that fundamental goal.

CHAPTER 15

INSTALLATIONS

Military installations provide the foundation for U.S. defense efforts. Maintaining these installations is, therefore, critical to supporting America's national security. DoD must continue to sustain and reshape this foundation so that military facilities adapt to the ever-changing requirements supporting readiness and quality of life.

INSTALLATIONS OVERVIEW

VISION AND GOALS FOR DEFENSE INSTALLATIONS

DEFENSE FACILITIES STRATEGIC PLAN

The vision is simple to state, but complex to achieve: Installations must be available and capable to effectively and efficiently support DoD's missions. Achieving this vision requires a substantial effort. To guide DoD's short-term work, the Department has four overarching goals:

- **Right Size**—Locate, size, and configure installations and facilities to meet force structure requirements.
- **Right Quality**—Acquire and maintain facilities to provide mission-ready installations and quality living and working environments.
- **Right Resources**—Leverage available resources and improve the balance between requirements and funding.
- **Right Tools**—Improve facility management by using modern asset management techniques.

This vision and these goals are incorporated in the Defense Facilities Strategic Plan and have guided the Department's work. The Department has many initiatives underway directed at achieving these goals and, ultimately, the vision for installations.

INSTALLATIONS POLICY BOARD

The Installations Policy Board (IPB) is a deliberating body through which Department-wide guidance, policies, and decisions are made with respect to important issues affecting installations. It is instrumental in developing new initiatives and enhancing joint efforts within the Department. The IPB is proving to be a valuable forum for addressing significant issues affecting Defense installations, providing direction to solve pressing problems, and implementing new programs to improve management and save energy.

STRATEGIC PLANNING FOR DEFENSE INSTALLATIONS

RIGHT SIZE

BASE REALIGNMENT AND CLOSURE

Securing legislative authority for future Base Realignment and Closure (BRAC) rounds is absolutely critical to enhance national security. The Department needs authorization for two future BRAC rounds for three primary reasons:

- DoD must reshape its base infrastructure to match changing mission requirements. BRAC is not just a budget exercise, it is critical to adapting DoD's infrastructure.
- DoD continues to maintain excess base capacity. The April 1998 *Report of the Department of Defense on Base Realignment and Closure* estimates 23 percent of DoD's base capacity is excess to its requirements in support of forces projected for 2003. Only a thorough BRAC analysis will allow the Department to precisely and prudently eliminate this unnecessary infrastructure.
- The savings from future rounds can be better spent on training DoD's forces, providing modern weapons to the Department's war fighters, improving sustainment support, reducing the backlog of deferred facility restoration and modernization at U.S. installations, and improving the quality of life for all military members. Based on the current estimate of the costs and savings for the BRAC rounds conducted in 1993 and 1995, the Department projects that the annual recurring savings from two future rounds would exceed \$3 billion. More efficient allocation of the Department's base infrastructure enhances readiness by keeping DoD's resources where they are needed.

BASE REUSE PROCESS

DoD is committed to helping communities affected by base closures. The redevelopment of 76 major bases closed or realigned during four rounds of BRAC has created approximately 61,000 new jobs and more than 1,400 tenants. Section 2821 of the National Defense Authorization Act for Fiscal Year 2000 (Public Law 106-65) authorizes the Department to convey base closure property to local redevelopment authorities (LRAs) at no cost through economic development conveyances (EDCs). EDCs require the LRA to agree that any proceeds from sale or lease of the property received during the first seven years after the date of transfer will be used to support the economic redevelopment of the installation. The Department issued preliminary policy guidance on October 29, 1999, to implement this new EDC authority and coordination is underway to issue a formal instruction and publish an Interim Final Rule in the Federal Register.

An important milestone at a BRAC installation is the completion of the environmental analysis for disposal as required by the National Environmental Policy Act. By the end of FY 1999, more than 80 percent of BRAC installations had completed this requirement. DoD has also made significant progress under the President's fast-track clean up initiative in completing environmental restoration requirements. At the end of FY 1999, clean up had been completed at 54 percent of the 4,885 sites at BRAC installations, encompassing over 80 percent of the BRAC property slated for transfer out of DoD's control.

JOINT USE/REGIONALIZATION

The Department continues to pursue ways to maximize joint use of facilities and installations and to encourage DoD components to maximize use of current facilities before programming new construction. Installation commanders are now required to consult with tenant activities on the base, before submitting construction projects, in an attempt to consolidate individual requirements into a single more cost-effective project. Installations in the same region are joining forces to procure services such as base maintenance and repair, communication services, and other base operating support services. In broader regions, often including multiple states, installations are joining together to procure electricity and other natural resources to save money through increased bargaining power.

ENHANCED USE LEASING

Enhanced use leasing is part of an overall DoD strategy to partner with the private sector and with local communities in order to maximize the efficiency of base and community support services. In order to improve the utilization of the bases DoD is retaining, the Department submitted legislation to modify the provisions of the Department's leasing authority in Title 10, United States Code, Section 2667. In June 1999, the Department reported to Congress that the current authority has limitations that, if removed, would enable DoD to use its underutilized capacity more effectively and further reduce installation support costs. Congress already adopted most of the provisions requested by DoD.

DEMOLITION AND FACILITIES DISPOSAL

Eliminating unnecessary facilities is also important. In 1997, the Military Services surveyed DoD's installations and identified over 80 million square feet of obsolete buildings, including more than 8,300 individual structures which could be demolished to save operation and maintenance dollars. As part of DoD's Defense Reform Initiatives (DRI), the Department directed the Military Services to eliminate these obsolete buildings by the end of FY 2003. In FY 1998–2000, the Services demolished and disposed of 44.9 million square feet, representing 56 percent of the long-term goal and 5.5 million square feet ahead of the plan. The Department has expended \$473 million dollars to achieve the cumulative FY 1998–2000 result—an average of \$10.53 per square foot demolished. The cost per square foot goal at the three-year mark is \$11.36—meaning results so far are about 7 percent under target cost, although costs are rising. In addition to square footage, the Services are demolishing selected non-building facilities (non-square footage). Examples include obsolete communication towers and storage tanks. Also in FY 2000, the Marine Corps exceeded the DRI goal of 2.1 million square feet and will continue to identify and demolish obsolete facilities in the future. These additional demolitions will occur outside the DRI performance management framework. Through FY 2000, DoD avoided approximately \$95 million in operations and maintenance costs due to its investment in demolition in FY 1998–1999. In FY 2001 and continuing each year thereafter, DoD's investment in demolition will avoid approximately \$90 million in costs.

RIGHT QUALITY***FACILITIES SUSTAINMENT, RESTORATION AND MODERNIZATION***

Sustaining, restoring, and modernizing facilities is critical to properly supporting the military mission. In the absence of proper sustainment, restoration, and modernization programs, the capabilities of DoD's facilities wither and can not adequately support the Department's activities. The Department has been reviewing its methods for determining sustainment, restoration, and modernization requirements as well as

the process by which these programs are justified and funded. The Facilities Sustainment Model, now being implemented throughout the Department, resolves many of the uncertainties about proper levels of sustainment funding. Using commercial benchmarks, the Facilities Sustainment Model provides standard requirement calculations for 100 percent of the facilities in the DoD inventory.

QUALITY FAMILY HOUSING AND BARRACKS

The quality of housing for military members continues to be a critical element in retaining the high caliber personnel who make DoD's military forces the best in the world. But most of the military housing the Department provides is old, below contemporary standards, and in need of extensive repair or replacement. Realizing the importance of safe, adequate housing, the Secretary made improving housing one of the Department's top priorities. To that end, the Secretary established and funded a major 3-pronged initiative to improve military housing: Increase housing allowances to eliminate the out-of-pocket costs paid by service members for private sector housing; Increase reliance on the private sector through privatization; and Maintain military construction funding.

The Secretary's initiative increases the Department's program for housing allowances by more than \$3 billion over a five-year period. This funding increase, coupled with legislative relief from the requirement for at least 15 percent out-of-pocket expense, will enable the Department to gradually increase housing allowances, providing the service member with more money to pay for housing. The average out-of-pocket costs will be gradually reduced from the current 18.8 percent to 15 percent in FY 2001, until the costs are completely eliminated by FY 2005. This initiative further strengthens ongoing efforts to eliminate gang latrine barracks by 2008 and to eliminate inadequate government-owned family housing. It also complements the Department's military construction efforts in the housing area. The quality of life for service members will be improved in three significant ways:

- Higher allowances will help members who live in the private sector to afford good quality housing. By FY 2005, the typical member living in the private sector will have no out-of-pocket housing expenses—the same as military counterparts living in DoD-owned housing.
- Higher allowances will increase and enhance housing privatization, further improving service members' access to quality housing. Higher allowances will increase the income available to private sector developers, facilitating increases in the quantity and quality of privatized housing.
- The combination of increased allowances and continued use of privatization will permit more efficient use of current military construction funding. Increased availability of quality private sector options will ease pressure on government-owned housing, reduce the need to maintain old, costly housing, and allow DoD to spend operations and maintenance funding more wisely.

QUALITY WORKPLACE

The Department is an active partner with industry and academia to pursue research, demonstration, and development to improve the quality and performance of DoD's buildings and building systems. This research is conducted for the purpose of increasing the satisfaction, health, well being and productivity of occupants, and to enable organizational change, and technological adaptability while improving cost, energy and environmental effectiveness.

FORCE PROTECTION

Acts of global terrorism continue to be on the rise and pose a larger threat than ever before. The use of weapons of mass destruction is no longer just a fear, but a real threat. History reveals that terrorists attack where DoD's military and civilian personnel work and live. Antiterrorism force protection considerations are not a luxury and are an essential consideration in military construction planning. In 1999 and 2000 the Secretary of Defense directed the Services to ensure that all construction planning include force protection standards that are measurable and enforceable. Interim DoD Antiterrorism Force Protection Construction Standards were published in December 1999.

ENVIRONMENTAL, SAFETY AND OCCUPATIONAL HEALTH MANAGEMENT

The focus of the Department's environmental, safety and occupation health (ESOH) program is protecting the environment and human health and reducing accidents. Sound management of each of these responsibilities reduces operating costs. Indeed, DoD has reduced spending for environmental programs as a percentage of DoD's total obligation authority from just over 2 percent in FY 1994 to less than 1.5 percent in FY 2001. The ESOH program also enhances readiness by reducing training time lost to accidents, injuries and illnesses. To lower management costs, prevent accidents and injuries, and close out the cleanup of DoD's contaminated facilities, the Department's tools include: environmental management systems, operational risk management, job safety analysis, operational deployment of preventive medicine teams and safety experts, ergonomic cost benefit analysis studies, health risk analysis for personnel exposed to fuel, private sector cleanup models, partnering with regulators, and cooperative agreements with Native American tribes.

Since 1990, DoD has continually improved the environmental management at its facilities by using innovative techniques to reduce waste streams. For example, material substitutions helped reduce DoD's toxic pollutant releases 65 percent from 1994 to 1999. Effective management systems enabled DoD to keep abreast of the latest environmental regulations. In 1999, DoD had its lowest number of adverse regulator enforcement actions ever recorded. The vigilant efforts of the Department's environmental experts also helped DoD quickly identify and address drinking water safety issues, at a number of installation, when the Environmental Protection Agency issued strict new standards. Efforts such as these have lowered operating costs and avoided unnecessary expenses associated with failure to comply properly with the myriad of national, state and local environmental regulations.

In 1996, the Department's leadership assessed the extent to which DoD had improved its environmental program. The next step was to evaluate whether implementing an Environmental Management System (EMS) would accelerate the pace of improvement. Corporate experience demonstrated that an EMS provided a consistent management framework, improved risk identification, and reduced liability. DoD's leadership also believed that adopting an EMS as a management tool would help DoD overcome disruptions caused by personnel turnover, and improve relations with regulators.

Based on its experience with implementing EMS at 16 installations as part of a pilot study that began in 1997, DoD is committed to using EMS as a tool to enhance its environmental programs. In recognition of DoD's commitment to EMS and the Department's pilot study experience, the Environmental Protection Agency asked DoD to mentor other agencies as they implement EMS. Executive Order 13148, "Greening the Government Through Leadership in Environmental Management," requires all agencies to implement

an EMS at all federal facilities by 2005. DoD's advanced work on EMS implementation enabled DoD to begin meeting this requirement well ahead of the deadline.

Similarly, DoD continues to be a pacesetter for successful Occupational Health and Safety programs. DoD emphasizes eliminating hazardous conditions and environments through effective hazard identification, hazard abatement and accident prevention. Operational risk management and job safety analysis are just two of the tools DoD uses to reduce mishaps and prevent injury of the Department's personnel. These tools have allowed DoD to reduce the number of accidental fatalities of military personnel from 39.9 per 100,000 people in FY 1992 to 30.3 per 100,000 people in FY 1999. DoD also lowered civilian injuries and reduced annual worker compensation costs by \$3.4 million. Because of top leadership emphasis on improving aviation safety, DoD continued to reduce aircraft accidents from 2.1 accidents per 100,000 flying hours in 1992 to 1.61 accidents per 100,000 flying hours in 1999. In some of its recent operations such as Operation Joint Endeavor in Bosnia, DoD used preventive medicine teams, and safety experts to reduce fatalities and illnesses. Each of these efforts enhances readiness by reducing the amount of training hours lost to illness and injury.

DoD is developing other tools and models to improve the Department's occupational health and safety program. For example, DoD is currently developing an ergonomic cost benefit model. This model will help safety and health experts identify ergonomic needs to reduce injury rates and medical claims. DoD also launched a collaborative effort with industry and academia to conduct additional studies to ensure complete understanding of how exposure to JP-8 fuel affects human health. DoD's goal is to protect the Department's personnel against hazardous levels of JP-8, the most common fuel to which military personnel are exposed.

Just as the Department's preventive measures have demonstrated success, improved management techniques have helped DoD more effectively clean up consequences of the Department's past practices. By the end of FY 1999, DoD put all remedies in place or reached response complete at 67 percent of active installations, 45 percent of Formerly Used Defense Sites properties, and 43 percent of BRAC installations. Overall, this means DoD has finished all clean up activities at 54 percent of DoD's installations and properties. To continue this trend, DoD is accelerating restoration activities in an effective and efficient manner through greater emphasis on private sector models and innovation and improvement of ties with regulators, tribal governments, and communities. The Department also will continue efforts to involve communities, regulators, and other stakeholders in environmental activities, viewing partnering essential to the success of DoD's restoration program. These efforts will eventually result in significant savings.

DoD's operational and training requirements, especially those occurring during World Wars I and II, had environmental impacts on American Indian and Alaska Native lands that remain today. Tribal governments are concerned about the adverse effects on tribal environmental health and safety, as well as economic, social, and cultural welfare. Under the Federal Indian trust responsibility, DoD has a legal obligation to address these environmental effects.

In recognition of DoD's trust responsibility, Congress has required DoD to devote \$8 to 10 million annually since 1993 to address environmental impacts to Native American lands. In response, DoD created the Native American Lands Environmental Mitigation Program. DoD uses cooperative agreements to clean up contamination of tribal lands caused by past DoD activities. These partnerships give tribes control

over, and responsibility for mitigation efforts, and enable DoD to provide technical assistance. DoD signed the first cooperative agreement in 1997 and now has nine agreements.

RIGHT RESOURCES

With new tools being developed, the Department is better able to provide relevant guidance on installations programs to the Services, and more capable in measuring program performance. DoD has improved guidance on housing improvements and facilities demolition, and plans to revise guidance on facilities operations, sustainment, restoration, modernization, and construction.

STANDARDIZING AND VALIDATING HOUSING REQUIREMENTS

The Department continues to work on the development of a single model for determining the government-owned housing needs using a set of standard DoD-wide factors along with flexible variables that accommodate Service differences. This model will help DoD determine the number of government-owned housing units that need to be constructed or maintained as well as determine the size of the Department's housing privatization projects.

MILITARY FAMILY HOUSING PRIVATIZATION

Approximately two-thirds of DoD's nearly 285,000 government-owned houses are in need of extensive renovation or replacement. Fixing this problem using only traditional military construction will take almost 30 years and \$16 billion. The Department's Military Housing Privatization Initiative (MHPI), signed into law in 1996, began a five-year test of authorities provided by Congress to help solve the housing problem. As part of the National Defense Authorization Act for Fiscal Year 2001, Congress extended the authorities for an additional four years, until December 31, 2004. The authorities allow DoD to provide the private sector with any one or combination of the following incentives: direct loans, guarantees of loans or occupancy, differential rent payments, conveyance or lease of DoD-owned property and facilities, and investment in nongovernmental entities. The MHPI enables the Department to decrease its up-front construction expenses and eliminate the operations, maintenance, and management costs that are incurred over the life of the traditional housing construction projects through private sector leverage. Housing privatization projects can be sited either on base or off base. Siting privatization projects on base allows the Military Services to keep military members close to the military mission and provides a level of comfort and protection when family members are left during periods of deployment.

DoD has awarded eight projects to date: 404 townhouse units at Naval Air Station, Corpus Christi, Texas; 185 townhouse units at Naval Station, Everett, Washington; 420 housing units at Lackland Air Force Base, Texas; 670 units at Robins Air Force Base, Georgia; 402 units at Dyess Air Force Base, Texas; 712 units at Camp Pendleton, California; 150 units at Kingsville, Texas; and a whole-base housing privatization project totaling 2,663 units at Fort Carson, Colorado. In addition, the following projects are currently in solicitation: 6,631 units at Fort Hood, Texas; 3,589 units at Fort Lewis, Washington; 3,170 units at Fort Meade, Maryland; 1,890 units at Kirtland Air Force Base, New Mexico; 258 units at Goodfellow Air Force Base, Texas; 114 units at Marine Corps Logistics Base Albany, Georgia; 3,248 units in San Diego, California; 661 units in South Texas; 935 units at Naval Air Station New Orleans; Louisiana; 200 units at Stewart Army Subpost, New York; 288 units at Everett, Washington; and 780 units at Elmendorf Air Force Base, Alaska.

Four projects encompassing more than 3,600 units were privatized by the end of FY 1999, more than 4,700 were privatized by the end of FY 2000 and, by the end of FY 2001, over 37,000 units will be privatized.

UTILITY PRIVATIZATION AND ENERGY MANAGEMENT

With military installations spending over \$2.2 billion annually to procure energy commodities, optimizing energy use is critically important to the Department. To accomplish this objective, DoD is privatizing its utility infrastructure to improve system condition and efficiency, installing energy savings measures throughout its bases and buying electricity competitively in states that have restructured their electricity markets.

The Defense Reform Initiative directed the Military Services to privatize military owned electric, water, wastewater, and natural gas systems by September 30, 2003, where practicable. Transferring ownership and the associated management responsibilities to the private sector will free up resources that can be utilized to improve readiness. The capital and expertise of the private sector will be used to maintain and upgrade these systems. The Military Services identified nearly 1,500 individual utility systems as candidates for privatization.

The Department is making steady progress to reduce its energy and water consumption and is on track towards meeting the President's energy management goals, as directed by Executive Order 13123. Building and facility energy use has been reduced more than 22 percent on a square foot basis since 1985. DoD's strategy for conserving energy and water resources uses a balanced program of appropriated funded projects, and private sector capital through Energy Savings Performance Contracts (ESPCs) and Utility Energy Services Contracts (UESC) to finance energy-saving investments. Use of ESPCs and UESCs more than doubled during the last two years and by the end of FY 2000 there were over 200 of these contracts underway at DoD installations.

The Department is expanding the use of Sustainable Design in its construction program, with all Military Services embracing the design concept. Sustainable buildings optimize the use of resources by using innovative technologies to reduce energy and water consumption, decrease waste products and increase the recyclable content of construction materials, while creating livable, healthy and productive surroundings for the occupants. These buildings do not necessarily increase initial construction costs and when life-cycle costs are considered they are usually more cost-effective than traditionally designed buildings.

The Department has made it a priority to use renewable energy where it is cost-effective. DoD installations installed more than 2,500 solar roofs during 1998–1999, single-handedly surpassing the President's goal for the Federal Government of 2,000 roofs by the year 2000. Green power proposals are encouraged in solicitations for competitive electricity in states that have restructured their electricity markets.

The Defense Energy Support Center (DESC) continues to expand and improve the services it provides to the DoD components. In addition to its role as the implementing agency for the DoD Direct Supply Natural Gas program, DESC has become DoD's primary agent for the procurement of electricity in restructured markets, consolidating demand among installations regionally across Services, taking advantage of larger, diverse loads to obtain better rates. DESC actively tracks and reports on the progress that states are making in restructuring the electricity market. DESC also provides extensive contracting support to the Services'

utilities privatization programs, including the Texas Regional Demonstration pilot that includes installations from all four Services.

COMPETITIVE SOURCING AND STRATEGIC SOURCING

One of the four initiatives underlying the Department's overarching reform efforts is to compete DoD's commercial activities and apply market mechanisms to improve quality, reduce costs, and respond to customer needs. Experience demonstrates that competition yields both significant savings and increased readiness for the Military Services. Thus, competitive sourcing is a major pillar of the business strategy for defense as enunciated in the Defense Reform Initiative (DRI) Report. There is currently \$12.4 billion in funding for readiness and modernization that depends upon successful implementation of the Department's current competitive and strategic sourcing plans. By FY 2005, the Department plans to study 271,440 positions to achieve these savings.

In Spring 2000, the Department completed an updated and comprehensive inventory and review to appropriately identify candidates for competition. The inventory and review of all civilian and military positions determined which positions within the Department are: inherently governmental, commercial activities exempt from competition, and commercial activities available for competition under Office of Management and Budget (OMB) Circular A-76.

About 2,851,000 positions were reviewed. In response to the Federal Activities Inventory Reform (FAIR) Act of 1998, 452,807 civilian manpower authorizations were identified as commercial, with 57 percent (259,628) of them identified as subject to competition or direct conversion under the provisions of OMB Circular A-76.

As a result of the traditional A-76 competitive sourcing program, the Department saves about 35 percent on service costs and will reduce manpower involved in commercial activities by about 24 percent. Although the program has achieved significant savings, the Department has recognized that a broader approach to the traditional A-76 competitive sourcing program could lead to greater savings and efficiencies and would identify more opportunities for competition. This broader approach, called Strategic Sourcing, complements the A-76 program and is consistent with the reinvention goals expressed in the DRI and the competitive sourcing process described in OMB Circular A-76.

Strategic Sourcing is not avoidance of A-76. Rather, this approach more logically focuses on functions rather than billets and allows the Department to move beyond theoretical debates about what is inherently governmental because it shifts focus back to actual program implementation. Strategic Sourcing allows the Department to make wiser business decisions because it is an enterprise-wide versus compartmentalized approach. This approach looks across the entire organizational spectrum at all functions, including those that are exempt from the traditional A-76 process, as well as commercial activities, to determine if the function should be retained, eliminated, or revised. This is a more logical approach because, as the Department's inventory confirmed, most organizations have an embedded mixture of functions that are both inherently governmental and commercial in nature.

MILITARY CONSTRUCTION

The Military Construction (MILCON) program is DoD's source of funding for the capital necessary for replacement and new mission facilities. The average age of DoD facilities is 41 years, and is increasing.

The Department must prudently manage its lean MILCON budget. For FY 2001, Congress appropriated \$9 billion for military construction, family housing, and BRAC. This amount included \$3.7 billion for over 400 construction projects at more than 200 locations, \$500 million for activities such as planning and design and unspecified minor construction, \$200 million for NATO Security Investment Program, \$1.0 billion to implement prior rounds of base realignments and closures, \$2.7 billion to operate and maintain family housing, and \$900 million to build new or to improve existing family housing.

RIGHT TOOLS

INSTALLATIONS READINESS REPORTING

In FY 2000, the Department reported to Congress for the first time on Installations Readiness as part of the regular DoD Readiness Reporting System. The Department developed this tool to give a macro level assessment of the condition of DoD's installations and facilities, and the effect facility condition has on military readiness. Major commands rate each of the nine facility classes, using standard readiness definitions and use these ratings to help in the decision making process on how to allocate repair and construction funds.

ACCOUNTABILITY FOR REAL PROPERTY

The Department needs accurate and timely information on the real property inventory for programming, budgeting, and financial reporting, and has undertaken a variety of activities to improve its inventory system. These includes a concentrated effort to validate recorded cost and quantity data and improve financial statements, creation of a unified facilities assessment database that covers the entire Department, and modernization of real property reporting instructions. The Department is presently studying the capabilities of the current and planned real property information systems to support decision making in the future.

FACILITIES SUSTAINMENT MODEL

The Facilities Sustainment Model (FSM), developed by a cross-Department working group, is a new, simple but powerful forecasting tool. The model generates an annual funding requirement to sustain an inventory over a normal life cycle. FSM is grounded in standard facility-specific cost factors, tied to the inventory that must be sustained, and applicable throughout the Department of Defense. The cost factors are based, whenever possible, on commercial benchmarks. Version 2.0 of the *DoD Facilities Cost Factor Handbook* covers 100 percent of the DoD physical plant, including 90 percent with commercially based benchmarks. The model computes a unique sustainment cost for each type of facility and accounts for variable area costs.

To accommodate the use of FSM across the Department, the facilities maintenance and repair accounting structure has been modified. DoD now has a Facilities Sustainment program, which captures the cost to keep an inventory in good working order, plus a Facilities Restoration and Modernization program, which captures the cost to restore damaged facilities to functional status or to modernize facilities to new standards. The new focus is on outputs—sustained, restored, and modernized facilities—rather than maintenance and repair activities.

FACILITIES AGING MODEL

The Facilities Aging Model (FAM) is under development as a tool for understanding the requirement for capital investments in facilities. The tool predicts the aging of the physical plant under variable investment scenarios. The idea behind FAM is to enable the Department to better manage the remaining useful life of facilities—to accept less in some cases, or to buy more in others—depending on the type of facilities and the mission they support. The FAM uses the concept of Target Replacement Life, the point at which functional obsolescence sets in without a major modernization or replacement project. The FAM is related to the FSM in the sense that the Target Replacement Life is reduced in the absence of full sustainment.

UPDATING DOD DIRECTIVES AND INSTRUCTIONS

The Department is striving to ensure consistency among the Services' competitive sourcing programs by updating the formal regulations. Interim guidance, issued in April 2000, provides the Services direction on the strategic sourcing program. To provide a more consistent and disciplined application of the OMB rules in DoD, the interim guidance includes policy on various aspects of the competitive sourcing program.

In addition to these policy documents, the Department is working on handbooks for the field technicians. These handbooks will not be mandatory, but will contain best practices and provide a single source document to assist in the various aspects of the cost comparison process. In addition to these handbooks, the Department is also developing an A-76 cost comparison knowledge management system. This system will not only contain links to all other sites that have A-76 information, but it will also have the capability for field technicians to submit lessons learned and best practices.

Competition with the private sector is, and will continue to be, a dominant factor in the Department's plan to do its business better, faster and cheaper. The Department will also consider a wide range of options, including consolidating functions, reengineering and restructuring of organizations, adoption of streamlined business practices, elimination of obsolete practices, and privatization of functions in order to reach its goal of obtaining efficiencies and generating savings.

CONCLUSION

The Department is adapting the facilities inventory and the facilities delivery system to meet the demands of the 21st century. New tools are coming on line to help determine the proper amount and allocation of resources, allowing the Department to make sound decisions to improve the quality and adjust the size of the facilities inventory. Right tools and right resources are the inputs to the facilities delivery system; right size and right quality are the outputs. The Department is committed to making significant progress toward all four of these goals in pursuit of its long-term vision to make installations and facilities available when and where needed, with the capabilities necessary to effectively and efficiently support DoD missions.

CHAPTER 16

INDUSTRIAL CAPABILITIES AND INTERNATIONAL PROGRAMS

The United States defense industry is in a time of transition, marked by downsizing and consolidation following the post-Cold War defense budget drawdown. While some firms in the industry have found it difficult to adjust to the post-Cold War environment, all firms face very real long-term challenges going forward as they must make their adjustments in a very different and dynamic defense environment. The U.S. industrial objective is to ensure a healthy, financially stable, efficient and competitive defense industry that can provide innovative, high quality and affordable defense products to meet national security needs in the 21st century.

DRIVERS OF CHANGE

While there are many factors shaping the defense industry structure, the single greatest influence has been the decline in the defense budget in the post-Cold War environment. Defense procurement spending is down approximately 70 percent since the Cold War high in 1985. The decline has resulted in three major trends:

- The Department's acquisition program plans forecast fewer major new programs with longer intervals between starts and lower production quantities per program;
- Industry has responded with a natural consolidation that concentrates firms horizontally at the prime and sub-tier levels and tends toward relatively more vertical integration of capabilities than in the past;
- A reduction in the Department's direct control over and visibility into the supply chain upstream of the prime contractors as a consequence of having revised DoD's contracting and oversight approach and reduced its program-related acquisition staffs.

Fewer companies are vying for fewer contracts to produce fewer goods and services. As a result, defense firms have reduced excess capacity and workforce levels to better match reduced demand, streamlined processes, increased productivity and revamped supplier relationships. They also have significantly consolidated via mergers and acquisitions—a consolidation that continues today.

Merger and acquisition activity in the defense sector among first tier prime contractors is slowing while activity among second and third tier suppliers is increasing, as these suppliers seek to improve both capabilities and market penetration in response to their customers' supply-chain management approaches and, to some extent, in response to competition from their customers' broader capabilities.

Notwithstanding the significant restructuring and consolidation, at least two or three robust, competitive and technologically superior firms, with a viable supplier chain to support them, compete in most major defense product markets. U.S. defense industrial capabilities are the world's best.

FINANCIAL STABILITY

By and large, U.S. defense firms are financially stable. Obviously, the defense industry has gone through a period of transition. In the aftermath of the significant mergers of the mid-to-late 1990s and a series of company-specific circumstances—problems in specific programs and the like—the industry's stock valuations fell considerably in 1999. The changing financial performance of defense firms reflects, in part, the difficulties the industry had in adjusting to its new environment, including the complex task of absorbing acquired firms, restructuring and rationalizing operations, and the inevitable dislocations and debt burdens. But, as in other industries that have experienced significant merger activity, the defense industry is rising to the challenge, working through these issues, and taking the steps needed to remain competitive and innovative—streamlining operations, sharpening their focus on core markets, focusing on cash flow, and shedding non-core assets.

Thus, while U.S. defense firms face real challenges for the future—recruiting and attracting talented personnel, continuing to streamline and rationalize operations and reduce underutilized capacity, and integrating cutting edge commercial technology—they are on the right track.

EFFICIENCY

Despite extensive industry consolidation, recent DoD-sponsored studies show underutilized capacity (e.g., facilities, equipment and manpower) in the aircraft and satellite industries—at some expense to DoD and the taxpayers. Internal restructuring actions (in contrast to mergers and acquisitions) could allow defense firms to adopt commercial processes and increase the flexibility of their manufacturing lines. These changes could not only produce efficiencies that reduce the costs of products to the DoD, but allow the firms to better leverage opportunities for commercial and military product or business integration. The Department, therefore, encourages defense firms to take appropriate internal restructuring steps to rationalize assets and facilities and streamline operations, thereby lowering overhead costs.

ENSURING COMPETITION

The current defense industrial environment makes maintaining competition for the future more difficult. The Department's approach to maintaining competitive sources in defense markets focuses on three areas that can have an impact. First, merger and acquisition reviews; second, the acquisition process; and third, global industrial linkages.

MERGER AND ACQUISITION REVIEWS

To facilitate vigorous competition in defense markets, the Department of Justice and Federal Trade Commission antitrust enforcement agencies, under the Hart-Scott-Rodino legislation, review proposed mergers and acquisitions in the defense industry to ensure that the transactions do not adversely affect competition and innovation for DoD programs. Since DoD is the principal customer for defense goods and

services, the antitrust agencies rely on DoD to provide an opinion on any transactions that impact its programs.

DoD established, and has utilized for a number of years, a formal and rigorous review process for proposed mergers and acquisitions (reflected in Department of Defense Directive 5000.62). In this process, DoD evaluates: any potential anti-competitive effects of defense mergers and acquisitions (horizontal concentration, vertical integration, conflicts of interest); and the potential efficiencies and cost savings to DoD that such mergers and acquisitions can produce. The approach reflects the reality that evaluating the consequences for DoD of a particular merger can only be done on a case-by-case basis, based on the relevant facts and specific circumstances. There is no one-size-fits-all criterion.

As in the past, each proposed merger should be evaluated on its particular merits in the context of the conditions of the individual market involved, and the changing dynamics of that market's structure. There are no universal truths in this area and, depending on the facts, mergers in some market segments may raise competitive issues while mergers in other market segments may not.

Of course, the significant consolidations in the industry do make DoD's analysis of mergers today that much more complex and difficult. All things being equal, a consolidation from five suppliers to four in a product market raises fewer complex issues than a change from three to two.

In 2000, the Department formally reviewed 28 transactions and opposed none. One company withdrew its filing because of DoD placing conditions on the transaction. Two companies' transactions required consent agreements to ensure that continued competition will be protected (divestitures and/or firewalls to protect proprietary information, agreements not to enforce exclusive teaming arrangements, and divestitures of certain business units).

ACQUISITION PROCESS

DoD must consider this new consolidated industrial environment when making procurement and technology strategy decisions. While market forces often work to ensure credible competitive sources, a number of factors may operate to make firms less likely to remain in or enter defense-specific markets—including limited demand for products and high barriers to market entry. The challenge, then, is to maintain a sufficient number of capable defense industrial sources to meet future national security needs.

In 1999, the Department put in place two policies directed at enhancing DoD acquisition management insight into industry and the competitive effects of DoD buying actions. One focuses on increasing government insight into the subcontractor selection process. The other deals with anti-competitive teaming at either the prime or subcontractor level. Both policies aim to ensure adequate competition and the best value for DoD.

In the acquisition area, the Department is concerned about the implications of the acquisition strategies and decisions on whether there will be sufficient capable and competitive suppliers to compete for major contracts in the future. In other words, DoD is formulating policies that will help ensure acquisition decisions today do not erode industrial capabilities and leave DoD with monopoly suppliers.

Significantly, in July 2000, the Department issued a competition policy which requires the Department to consider the effects of its acquisition strategy and technology and budget plans on future competition. The policy requires improved visibility into cases where competition may be at risk (e.g., where two or fewer competitors exist) and a process to ensure that these cases—which often transcend a single program and apply to a product market—are assessed on a Department-wide basis to determine if DoD action is needed.

The purpose of these policies is not to change source selection decision—awards should still be to the best value firm. Rather, the point is to increase DoD's focus on industry considerations in acquisition and budget strategy setting in an effort to get ahead of the problems.

GLOBAL INDUSTRIAL LINKAGES

Another strategic avenue the Department has taken to meet the challenge of ensuring continued competition in a consolidating marketplace is to broaden potential sources of supply globally and create more opportunities for U.S. firms to compete abroad. Specifically, strengthened U.S. industrial linkages with key coalition partners are important to facilitate interoperability among coalition forces, improve coalition warfighting capabilities, and promote competition in defense markets.

DoD favors a competitive transatlantic industrial model characterized by industrial linkages among multiple firms on both sides of the Atlantic, competing effectively in the large European and U.S. markets, and sharing technology subject to security safeguards. In this model, the U.S. and Europe realize the benefits of competition and interoperability, NATO is strengthened, the large U.S. and European markets are open to transatlantic firms, and proliferation incentives in the third world are significantly decreased.

The unfavorable alternative is one or two pan-European firms and several large U.S. firms that have closed home markets and compete in the third world. A fortress mentality could result in the separate evolution of U.S. and European military technologies, undermine competition and interoperability, and lead to sole-source European firms selected as suppliers for political purposes.

For these reasons, DoD favors pro-competitive, security-enhancing industrial linkages of various types—from mergers and acquisitions to joint ventures covering product lines to other forms of collaboration—between firms in the United States and its coalition partners.

A significant challenge for government is the need to put in place the hardwiring needed for defense industrial linkages. The key impediment to better technology sharing with coalition partners is the export control regime for defense articles, which is in need of updating. Export control reform is a central underpinning of efforts to better fight the wars of the future together with coalition partners. This reform is vital to the NATO Defense Capabilities Initiative, which encourages NATO partners to spend more on defense, to spend more wisely, and to promote industrial linkages.

EXPORT CONTROL REFORM EFFORTS

The President approved and the Secretary of State announced the Defense Trade Security Initiative in May 2000. This purpose of this initiative is to improve security by enhancing NATO's defense capabilities, promote interoperability with U.S. allies and friends, and promote global defense industrial linkages and competition in defense markets in an era of consolidation. These changes are critical to promoting industrial linkages and also serve to enhance security in relation to potential adversaries.

The Defense Trade Security Initiative consists of three elements. First, the U.S. will establish special country exemptions from U.S. export rules for countries that have the most congruent policies in five key areas—export controls, industrial security, intelligence, law enforcement and trade reciprocity—and are willing to improve in parallel with the U.S. This approach will remove the requirement for export licenses for U.S. allies for most unclassified exports, thereby enhancing defense cooperation and technology sharing through a variety of government and industry approaches. As required by the Security Assistance Act of 2000, to issue such exemptions, the U.S. must conclude a legally binding agreement with the government involved that will ensure such exports under the exemption will be used for their intended use, and will not be re-exported to third countries without prior U.S. approval. This approach allows the closest level of collaboration in R&D and other areas in the most effective manner possible.

Second, the U.S. created a broad range of flexible licensing vehicles for use with NATO and other treaty allies. These authorizations are broader in scope than existing ones, allowing a flexibility and creativity that is tailored to individual projects and for longer duration than in the past, thereby increasing the efficiency of the process and reducing the requirements for multiple licenses for the same project. These new licensing mechanisms are available for a wide range of projects, including cooperative government-to-government programs, commercial sales, and private sector joint ventures and cooperative efforts.

Finally, the Department is taking a number of steps to streamline the regulatory process and to add needed resources to ensure the timeliness of U.S. decision making.

This initiative calls attention to the fact that even in an interconnected and globalized world, the U.S. commitment to security cooperation will be maintained with allies while ensuring that export controls will be maximized for problematic destinations and users.

SECURITY OF SUPPLY

Among the consequences of globalization and industrial restructuring are the creation of transnational defense companies, possible loss of certain domestic industrial capabilities and capacities, and increasing acceptance of mutual defense dependence. Reciprocal security of supply systems (that is, reciprocal industrial priorities systems) can provide increased assurance that the Department's non-U.S. defense suppliers will be in a position to provide timely supplies in emergency situations and during peacetime.

The United States has a Defense Priorities and Allocations System based in statute—the Defense Production Act. The statute provides explicit authority for the preferential performance of defense contracts over commercial contracts. The statute also provides authority to provide the same preferential treatment for foreign nation defense orders in the United States when such treatment furthers national defense interests. To date, Canada (via a longstanding bilateral agreement) and the United Kingdom (via individual requests) have benefited significantly more than other allies have from this authority.

Reciprocity considerations have been a topic of discussion within NATO for some time. In February 2000, members of a NATO working group on assurance of supply developed a working paper, proposing agreement on priorities and allocations systems within the alliance. This paper now is being coordinated formally and is projected to be submitted to the Senior Civil Emergency Planning Committee and to the Council of National Armaments Directors at their Spring 2001 meetings. Because of the many nations

involved, the proposed agreement contained in the working paper is rather general and the deliberative process is lengthy.

In lieu of focusing exclusively on negotiation and adoption of a multinational transatlantic agreement, formal bilateral agreements with key allies offer the United States an opportunity to establish faster and stronger government-to-government agreements for reciprocal priorities support. DoD representatives have had informal discussions about such bilateral agreements with United Kingdom, German, French, Dutch, and Swedish government representatives.

Because of its close ties with the United States, a priorities agreement with the United Kingdom Ministry of Defence appears to offer both more immediate potential benefits and a greater probability of success. Therefore, DoD and United Kingdom representatives are engaged in preliminary discussions about the feasibility of negotiating a formal bilateral agreement that would commit each nation to establish and maintain a priorities system (applicable in both peacetime and emergency/war) and to provide each other with access to its own systems.

SMALL BUSINESS EFFORTS

Small businesses are critical to the industrial base that supports DoD mission requirements and an important element in the economic fabric of the United States. They bring innovation to both the defense and commercial marketplaces. Additionally, small businesses are widely recognized as an economic engine to create jobs and ensure that a greater number of the Nation's citizens receive benefits from defense procurement spending.

DoD awards over 21 percent of total U.S. business awards to domestic small business concerns. In addition, DoD continues to exceed the statutory 5 percent goal for awards to small disadvantaged business (SDB) concerns and is making steady progress toward achievement of the 5 percent goal for awards to Women-Owned Small Businesses.

SMALL BUSINESS INNOVATIVE RESEARCH (SBIR) AND SMALL BUSINESS TECHNOLOGY TRANSFER (STTR) PROGRAMS

DoD's SBIR and STTR programs harness the innovative talents of the nation's small technology companies for U.S. military and economic strength. The technology developed from these programs has resulted in operational and cost improvements for DoD systems.

DoD's SBIR program funds early-stage R&D projects at small technology companies—projects that serve a DoD need and have the potential for commercialization in private sector and/or military markets. The program, funded at approximately \$560 million in FY 2000, encourages scientific and technical innovation in areas specifically identified by DoD components.

STTR is similar to SBIR, but funds cooperative R&D projects involving a small business and a research institution (i.e., university, federally-funded R&D center, or nonprofit research institution). The STTR creates, for the first time, an effective vehicle for moving ideas from U.S. research institutions to the market, where they can benefit both private sector and military customers. DoD's STTR program is funded at \$31 million in FY 2000.

MENTOR-PROTÉGÉ PROGRAM

The Department's Mentor-Protégé Program encourages DoD major defense prime contractors to work in tandem with small disadvantaged business firms and other eligible protégés to develop their business and technical capabilities. The ultimate goal is to enhance the potential contributions of protégés, thus allowing them to compete more effectively for defense-related work. Through the means of direct reimbursement of costs and credit agreements, mentors set the cooperative stage leading to the positive growth of protégés through contracting, subcontracting, increased revenues, and additional employees. The mentoring process usually encompasses a three-year period.

A successful mentor-protégé relationship depends upon the unqualified commitment and demonstrated understanding of both parties. The protégé's core competencies and capabilities are examined in the light of the mentor's strength, vitality, and expectations for the protégé. Outcomes vary, but they frequently include improvements to management practices, training coupled with practical assistance, specialized certifications, as well as in-depth exposure to financial management and project cost control.

Over 200 mentors and protégés have actively engaged in mutual support. Special recognition occurs annually with the presentation of the Nunn-Perry awards, named after former Senator Sam Nunn, who introduced the enabling mentor-protégé legislation in 1992 and former Secretary of Defense William Perry, who fully pioneered the strategy for the growth and the DoD benefits to be derived from the program.

In 2000, the following teams were the recipients of Nunn-Perry awards: Boeing (Mesa)-Technology Management (San Diego); Computer Sciences Raytheon (Florida)-Data Voice (Palm Bay); Lockheed Martin (Orlando)-T.J. Technologies (Ann Arbor); Northrop Grumman (Huntsville)-Ensor (St. Petersburg); Advanced Resources Technologies (Alexandria)-Triumph Technologies (Alexandria); Boeing (St. Louis)-Manufacturing Technology (Fort Walton Beach); Greenhorn & O'Mara (Greenbelt)-Utility Automation 2000 (Huntsville); Lockheed Martin (Dallas)-Tecnico (Chesapeake); Northrop Grumman (Dallas)-Mandaree Enterprises (Mandaree); The IT Group (Alpharetta)-Deerinwater Environmental (Norman); Science Applications International (Oak Ridge)-American Technologies (Oak Ridge); and Raytheon (Dallas)-RS Information Systems (McLean).

All of the participants in the Mentor-Protégé Program benefit from the strategic alliances, exposure in exploring new markets together, and developing new partnerships. Together, they strengthen the readiness capability of the Department.

WOMEN-OWNED SMALL BUSINESS (WOSB) PROGRAM

The DoD WOSB Program is a proactive effort composed of legislative and regulatory initiatives, implementation of best practices, training, technical assistance, outreach, and development of interagency initiatives. The Department is seeking legislative authority to expand the DoD Mentor-Protégé Program to include WOSB concerns as eligible protégés. This would create incentives for large DoD prime contractors to provide business and technical assistance to WOSB concerns. The following best practices implemented by DoD activities have been identified: proactive solicitation of WOSB concerns; expanded utilization of WOSB concerns in purchase card transactions; effective utilization of 8(a) and HUBZone programs to achieve the WOSB goal; and advocating teaming and partnering between large business concerns and

WOSB concerns. In addition, DoD activities have launched a series of outreach, training, and technical assistance initiatives for WOSB concerns.

The DoD is actively engaged in federal-wide efforts to achieve the 5 percent goal of awards to WOSBs. The Department is represented on the Interagency Committee for Women's Business Enterprise, the Small Business Administration Women's Business Advocates Working Group, and the Women-Owned Business Initiatives Task Force.

COMPREHENSIVE SMALL BUSINESS SUBCONTRACTING PLAN TEST PROGRAM

The DoD Comprehensive Small Business Subcontracting Plan Test Program authorizes the negotiation, administration, and reporting of subcontracting plans on a plant, division, or company-wide basis. The purpose of the test is to determine whether comprehensive subcontracting plans will result in increased subcontracting opportunities for small and small disadvantaged businesses while reducing the administrative burdens on contractors.

Eligible contractors include large businesses that performed under at least three DoD contracts during the preceding fiscal year, valued in the aggregate of \$5 million or more. Participants must have achieved an SDB subcontracting rate of 5 percent or more, or submit a detailed plan with milestones leading to a 5 percent SDB subcontracting rate.

WORKING WITH OTHER NATIONS—INTERNATIONAL PROGRAMS SUPPORT DOD'S TRANSFORMATION

Across the full range of military operations, U.S. forces often fight or work alongside the military forces of other nations. Coalitions have historically been the preferred means for U.S. forces to confront regional or global security issues—sharing the resource burden and increasing political legitimacy. Deploying forces in coalitions places a premium on interoperability—ensuring U.S. systems and practices are compatible with allies and other coalition partners. Improvements to coalition interoperability in C4ISR systems, weapons, logistics, doctrine and training, in the long term, yields efficiencies in operations that reduce sustainment costs and improve force protection. International armaments cooperation, in its many forms, supports the U.S. and coalition warfighter by enhancing interoperability, stretching declining defense budgets, and broadening available defense industrial capabilities.

DOD'S INTERNATIONAL ARMAMENTS COOPERATION POLICY

Armaments cooperation continues to be a key element of DoD's acquisition and technology efforts to field the most capable force possible. Prior experience shows that successful cooperative efforts require that DoD engage with potential partners in discussions at the earliest practicable stage to identify common mission problems, and to arrive jointly at acceptable mission performance requirements to balance cost, meet coalition military capability needs, and assure interoperability. Armaments cooperation programs have added greatly to the operational capability of the U.S. and its allies over the past decade and have facilitated deeper cooperation in other areas.

Many defense system programs will remain national. However, cooperation with allies must be the choice for those systems that require interoperability in coalition operations—for example, in areas such as air

defense, communications, intelligence, logistics, chemical/biological defense, and information security. Using no new resources, the Department has formed an Interoperability Directorate to provide an interoperability focus and strategic vision to existing and planned programs, network architectures, and requirements generation, across the entire Department.

The need for such a focus has been made obvious by significant interoperability gaps in coalition air to ground radar assets, communications gear, precision guided munitions, and other capabilities in recent coalition operations. These gaps have forced the U.S. to shoulder a disproportionate burden and have often degraded overall mission effectiveness. While it is not the sole responsibility of the U.S. to close these gaps, the situation has brought attention to the need for closer cooperation. Armaments cooperation is one of many complementary methods for improving coalition capabilities.

Other efforts have recently been taken to overcome political and legal barriers to effective cooperation. The Department has initiated bilateral negotiations with the United Kingdom and Australia to improve cooperation in areas such as the harmonization of military requirements, export control policies, security, and cross-border defense-industry mergers. Talks with other allies are scheduled to examine appropriate levels of cooperation in these and other areas.

The Department is engaged in various multilateral fora, which are focused on improving governmental and industrial cooperation between U.S. allies and likely coalition partners. NATO's Defense Capabilities Initiative was initiated at the 1999 NATO Summit to exercise many specific areas where the Alliance would benefit from closer cooperation. Combined with other military-to-military engagement activities, these programs go beyond seeking the physical interoperability of systems. They pursue, as well, interoperability in the areas of tactics, techniques, and procedures. By promoting common thinking, the Department increases the potential for developing common requirements.

Cooperative international defense programs are adapting the lessons learned from successful international commercial alliances as well. DoD is adapting commercial practices and establishing a new international armaments cooperation model by which governments establish the military requirements and business rules, but the industries involved establish the best international teams of their own choosing to competitively bid on the work. The objective is to create more balanced partnerships, ones which guarantee each individual member's independence while recognizing cooperative partners' interdependence, and to take full advantage of the efficiencies of the market.

Some of the more notable success stories in international industrial cooperation include the F-16 Falcon and its mid-life upgrade, the AV-8 Harrier, the T-45 training aircraft, the CFM-56 engine, and the continuing cooperative efforts under the NATO Airborne Warning and Control System program. The Department is working with allies in Europe and Asia to explore other cooperative efforts, including the Medium Extended Air Defense System, Multifunctional Information Distribution System, Joint Strike Fighter, Theater Ballistic Missile Defense, and NATO Allied Ground Surveillance efforts.

The Military Departments' International Cooperative Research and Development programs continue to promote the sharing of military technology among Allies, as well as the development of common equipment. Frequently, these research and development investments provide the cooperative linkage required to leverage the direction of independent national development programs and enhance military

capabilities. It is important to recognize that these efforts often enhance the joint capabilities of U.S. forces, as well.

The DoD Coalition Warfare Program, a new-start program for FY 2001, is a defense-wide effort to assist the CINCs, Services, and agencies in inserting coalition-enabling solutions into existing and planned joint U.S. programs. This program strictly leverages DoD and matching foreign investments in areas critical to coalition operations. The Coalition Warfare Program focuses not only on short-term interoperability-enhancing solutions, but also on early identification of coalition solutions to long-term interoperability issues (architectures, coalition requirements, etc.) with a broad range of potential coalition partners.

The Foreign Comparative Testing program also enhances international defense cooperation. This program, which evaluates foreign non-developmental items for DoD use, has included 21 foreign countries as active participants. The Services and the United States Special Operations Command have procured over \$5 billion worth of foreign equipment as a direct result of successful equipment evaluations. By purchasing foreign non-developmental items, DoD has reduced initial procurement costs, saved operations and maintenance costs, and avoided spending excess research, development, test, and evaluation funds while providing earlier fielding of world-class equipment to U.S. warfighters.

As DoD takes greater advantage of the opportunities in international defense cooperation and commerce, it continues to address the risks of the proliferation of weapons of mass destruction and advanced tactical systems. DoD has worked to ensure that the Services and agencies understand the nature and importance of the February 1995 Conventional Arms Transfer policy and take its tenets fully into account when pursuing cooperative international defense programs and sales. As a result, both economic security and national security interests are pursued and protected.

The Department has taken numerous steps to improve the effectiveness and efficiency of international cooperation. DoD has developed a new *International Armaments Cooperation Handbook* to provide a compendium of current policy, key processes, and points of contact for use by persons working on cooperation issues in the Department. The Defense Acquisition University continues to evolve its international cooperation curricula to meet the DoD acquisition and policy staffs' needs. Also, other information technology tools are being developed to aid the DoD staff in efficiently and effectively negotiating international agreements.

INTERNATIONAL COOPERATIVE OPPORTUNITY GROUP (ICOG) DEVELOPMENTS

The Department is examining the potential for international collaboration on upcoming major systems acquisitions. As part of this examination, the Armaments Cooperation Steering Committee (ACSC), the senior armaments cooperation policy and oversight body within DoD, is implementing a disciplined process for identifying new opportunities for international cooperation. A major ACSC initiative deals with the formation of International Cooperative Opportunity Groups (ICOGs) to identify and recommend specific new opportunities for armaments cooperation.

ICOGs are looking at areas of common need and seek to establish early communication with allies to create opportunities earlier in the acquisition process. The ICOG process identified programs as candidates for potential cooperation based on several factors: the degree of requirements commonality; the extent to

which the technologies, strategies, and budgets of the potential partners are complementary; the potential for international industrial teaming; and the perceived benefits and risks associated with undertaking such a program. Key topics at the recent Cooperation Day III annual meeting included mechanisms to better organize national/collective efforts to identify interoperability requirements; and to ensure appropriate national/collective investments in building and testing interoperable systems.

ENVIRONMENTAL COOPERATION WITH OTHER NATIONS’ MILITARY FORCES

The U.S. military developed a comprehensive and robust environmental program over the past 28 years that addresses all aspects of environment, safety, occupational health, pest management, fire and emergency services, and explosives safety. Further, the Department’s experience and knowledge in defense-related environmental issues can provide a useful engagement tool for combatant commanders in developing theater engagement plans and shaping their theaters.

MILITARY-TO-MILITARY ENVIRONMENTAL COOPERATION

Military-to-military environmental activities support U.S. foreign and defense policy objectives by shaping the international environment through cooperative engagement. Through bilateral and multilateral associations, DoD can help interested militaries obtain the necessary tools to understand, prioritize, and meet military environmental security needs. DoD environmental engagement reinforces efforts by militaries in newly democratic societies to adjust to such concepts as civilian oversight, public accountability, openness, and cooperation with civilian agencies. These activities, which support Secretary of Defense commitments and State Department regional strategies, are consistent with defense requirements identified in the National Security Strategy and Commander in Chief Theater Engagement Plans.

DoD conducts bilateral/multilateral environmental cooperation with Argentina, Australia, Canada, Chile, China, Czech Republic, El Salvador, Estonia, Finland, Germany, Georgia, Israel, Italy, Latvia, Lithuania, Jordan, Mongolia, Norway, Philippines, Russia, Slovenia, Sweden, South Africa, South Korea, Thailand, Turkmenistan, United Arab Emirates, United Kingdom, and Vietnam. DoD is discussing cooperation with Kazakhstan. In addition to promoting stability through engagement, DoD gains useful information from these exchanges in support of the Department’s environmental responsibilities as it takes advantage of the perspectives that other nations offer. In today’s environment of combined operations, the sharing of operational environment, safety, and occupational issues with U.S. allies protects U.S. military, as well as its allies’ militaries, and host-nation local nationals.

ARCTIC MILITARY ENVIRONMENTAL COOPERATION

DoD also engages in agreements such as the Arctic Military Environmental Cooperation (AMEC) Program, a trilateral forum for dialogue and joint activities among United States, Russian, and Norwegian military officials to address critical environmental concerns in the Arctic. One of the main objectives of AMEC is to develop technologies for the Russian military to address its radioactive and non-radioactive waste challenges in the fragile Arctic ecosystem. DoD, together with the Department of Energy and the Environmental Protection Agency, will leverage U.S. expertise in environmental techniques to address

radioactive and chemical waste associated with nuclear submarines. More importantly, this unique effort is helping to build trust and understanding among the three militaries.

CONCLUSION

The Department of Defense must ensure that it can access, utilize and maintain the best industrial resources available—defense and commercial, domestic and international—to obtain the lowest cost, highest performing products. Accordingly, the Department is reviewing merger and acquisition transactions to determine the effects on DoD programs and advising the appropriate antitrust agency; identifying and addressing industrial capabilities and competition concerns; and encouraging international industrial, armament and environmental cooperation. DoD is doing this in a manner consistent with sound business practices and the overall political, economic and national security goals of the United States.

PART V

THE FY 2002 DEFENSE BUDGET

CHAPTER 17

FY 2002 DEFENSE BUDGET

President Clinton's FY 2002 budget, being sent to Congress in January 2001, includes a National Defense funding total but no detail on funding for specific programs or appropriations titles. This Defense total would pay for the requirements contained in a detailed Department of Defense (DoD) FY 2002 budget plan, all parts of which are subject to change by the new President and his DoD leadership. The new President will forward to Congress full details on his proposed FY 2002 defense spending, once those details are completed. Additionally, the new DoD leadership will conduct a Quadrennial Defense Review (QDR) to set its course for the years ahead.

Like the three previous DoD budgets, the FY 2002 plan was developed largely based on the Department's May 1997 Quadrennial Defense Review. The QDR detailed changes needed to address new global threats and opportunities and to make the best use of constrained resources. Its recommendations on strategy, forces, modernization, and support activities guided the Department in giving balanced and strong emphasis on both current and future security needs. Near-term DoD budgets must sustain the readiness of U.S. forces to respond decisively to crises. Over the long-term, DoD must fund the needed post-Cold War transformation of America's defense posture and modernize U.S. forces to ensure their future combat superiority.

THE DEFENSE TOPLINE

During the first term of the Clinton Administration, the President and Congress supported cuts in the defense topline as they continued prudent adjustments in light of the end of the Cold War—adjustments that were begun under President Bush. Most of the cuts came from a shrinking of the force structure and a decline in weapons procurement, both of which could be made without undermining the superiority of U.S. forces. The decline in defense spending had begun in FY 1986, in response to pressure to reduce the federal budget deficit as prescribed by the 1985 Gramm-Rudman-Hollings balanced-budget law. The decline accelerated during the early 1990s, primarily in response to the end of the Cold War and collapse of the Soviet Union. In FY 1998, the last year of the decline, DoD budget authority was in real terms nearly 37 percent below its level in FY 1985, the peak year for inflation-adjusted budget authority since the Korean War. As a share of America's gross domestic product, FY 2000 DoD outlays were 2.9 percent, less than half the average percentage during the Cold War.

In the three years since President Clinton submitted his FY 1999 budget request in February 1998, a total of \$227 billion has been added to the DoD topline. (This total is for direct topline changes to DoD budget authority. It does not include adjustments to DoD funding as a result of economic changes in inflation rates, fuel prices, and the like. It also does not include rescissions.)

The biggest topline boost came in President Clinton's FY 2000 budget request in early 1999, when he proposed the first sustained long-term increase in defense funding since the 1980s. For FY 2000–2005, the President added \$84 billion to the topline. (The President also allowed the Department to retain and reapply \$28 billion in savings from favorable economic conditions—for a total of \$112 billion in added funding resources.) In his FY 2001 and FY 2002 budgets, the President proposed additional topline increases. For FY 2000–2007, a total of \$188 billion was added by the President in his FY 2000, 2001, and 2002 budget requests. The President also requested supplemental appropriations for the FY 1999 and FY 2000, totaling \$11 billion, to meet unforeseen requirements.

In its adjustments to and approval of President Clinton's supplemental appropriations in his budgets for FY 2000–2002, Congress added a total of \$28 billion to the DoD topline.

Table 17-1 details the \$227 billion in topline increases that were added to the long-term plan projected by the President's FY 1999 budget request.

Department of Defense Budget Authority (Discretionary \$ in billions)										Table 17-1
	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Total
FY 1999 President's Request	258	264	272	276	285	292	299	307	314	2,568
<i>Supplemental Requests</i>	+9	+2								+11
<i>Administration Topline Increases</i>		+4	+20	+35	+25	+25	+25	+27	+28	+188
<i>Congress Adds to Requests</i>	+7	+17	+4							+28
Total FY 1999–2007 Topline Changes	+16	+23	+24	+35	+25	+25	+25	+27	+28	+227
FY 2002 President's Request	275	287	296	310	310	317	324	333	342	2,795

BUDGET PRIORITIES

The FY 2002 budget plan supports the sound priorities emphasized in the 1997 QDR.

PEOPLE AND QUALITY OF LIFE

America's security depends on the high quality of its military people. Keeping that quality high means taking good care of those military professionals and their families with good pay, housing, health care, and other quality of life essentials. To address mounting warnings about retention and recruiting, the President's FY 2000 and 2001 requests proposed substantial improvements in military pay, retirement benefits, and the Basic Allowance for Housing. Congress supported these improvements, increased certain elements of them, and added new benefits for military families and retirees.

READINESS

To sustain prudent readiness the President's budgets have included strong funding for training, supplies, maintenance of weapons and equipment, and other preparedness essentials. Nevertheless, constant attention has been needed to address new readiness challenges, that continuously arise as an inevitable consequence of a high operational tempo and the aging of military hardware. During these years, the Department has increased or shifted funding to address readiness problems—while timely congressional passage of sufficient supplemental appropriations has been needed to replace budgeted funds that had to be diverted to finance contingency operations in the Balkans and elsewhere.

FORCE STRUCTURE AND END STRENGTH

The U.S. force structure and military end strength are about two-thirds of their levels when the Berlin Wall fell in November 1989. Most of this shrinkage occurred or was programmed to occur before President Clinton took office in January 1993. (Other personnel data is in Appendix C.) In recent years, the Department's focus has been on reshaping this smaller force to enable it to deal with post-Cold War threats and opportunities most effectively. Details on this military transformation are in Chapter 11.

MODERNIZATION OF U.S. FORCES

To ensure America's technological and qualitative superiority on future battlefields, U.S. forces must be modernized with new systems and upgrades to existing systems. The 1997 QDR recommended that annual Procurement funding increase to \$60 billion by FY 2001 in order to establish a prudent pace for producing and fielding new systems. The President's FY 2001 budget requested \$60.3 billion for Procurement. Congress appropriated \$59.8 billion in the Procurement title and another \$2.8 billion for C-17 procurement in an Airlift Fund within the Revolving Funds title.

STREAMLINING AND REFORMING INFRASTRUCTURE

For the past three years Secretary Cohen's Defense Reform Initiative has intensified DoD efforts to make its infrastructure leaner and more efficient in order to support U.S. forces better and consume less of the budget. Infrastructure savings will be especially important to the funding of weapons modernization. The most important next step in DoD streamlining is congressional approval of two more rounds of base realignment and closure (BRAC). Once fully implemented, these rounds should save about \$3 billion per year.

During the Clinton Administration, the Department carried out the bulk of the implementation of the previous four BRAC rounds. Net savings from these will total about \$15 billion when implementation is completed at the end of FY 2001. After FY 2001, recurring savings will be about \$6 billion per year.

CONCLUSION

The new President and his Department of Defense leadership will be assuming stewardship of a robust and balanced defense program. At its core are America's armed forces—stronger than ever and fully capable of securing the nation's future. Still, as in the past four years, constant attention will be needed to ensure optimum equipping and support for the military men and women safeguarding U.S. interests around the globe.

PART VI
STATUTORY REPORTS

REPORT OF THE SECRETARY OF THE ARMY

The United States Army remains the preeminent land force in the world today. As the nation's decisive force in war and peace, the Army continues its important role contributing to the execution of the National Military Strategy. More than 140,000 Army personnel are forward-stationed or deployed around the world on any given day from Korea to Kosovo, from Central America to Southwest Asia. These forces, comprised of America's sons and daughters, visibly demonstrate the nation's commitment to its responsibilities as a global leader.

The Army is in the midst of a strategic transition. Not since the beginning of the last century has such a comprehensive transformation been attempted. An effort of this magnitude—to change in time of peace because the Army knows its condition, because it is informed about the future environment, and because it knows what capabilities it will need—is historically unprecedented. The time to transform is *now*; the Army cannot miss this opportunity. Transforming the Army will maintain readiness in the near- *and* long-term. The Army will take bold and decisive action to sustain and build on the momentum already generated with solid bipartisan congressional support to deliver the capabilities the nation needs.

The Army embraces its role in executing its 21st century responsibilities and last year unveiled its vision to field a transformed Army that will be strategically responsive and dominant across the full spectrum of military operations. The Army Vision addresses three broad components—**PEOPLE**, **READINESS**, and **TRANSFORMATION**—through which the Army must continue to ensure land force dominance into the next century.

- The Army *is* **PEOPLE**—soldiers and civilians—active and reserve—retirees, veterans, and families. Soldiers are the centerpiece of the Army formation and its most important resource. It is the people of the Army who have made the sacrifices that have ensured the high level of readiness upon which the nation depends.
- The Army's top priority is **READINESS**. The Army has a non-negotiable contract with the American people to fight and win the nation's wars while executing the peacetime missions and deployments that prevent wars from occurring. Soldiers and civilians perform the critical role of keeping warfighting formations ready for worldwide employment. The Army must remain ready today and into the future, thus the criticality of maintaining the momentum of transformation to ensure the Army develops the capabilities expected of America's decisive force.
- **TRANSFORMATION** will field an Army that is more responsive and dominant and ensure a capable force is available until the Objective Force, which will provide the nation with an increased range of options for regional engagement, crisis response and land force operations, is achieved. The Army is shedding its Cold War designs and preparing to meet the national security requirements of the 21st century. Transformation will create an Army that is more strategically

deployable, agile, versatile, lethal, survivable and sustainable to be responsive and dominant across the full spectrum of operations.

As a less stable, more fractured world complicates the objectives of the national security strategy, the Army's span of expeditionary and decisive capabilities enable it to counter the full spectrum of threats posed to U.S. interests, to include both traditional and non-traditional threats. As the range of requirements for national security grows, so does the demonstrated advantage of the Army's complex organization. The Army provides tailored land forces to the geographic combatant commanders, manages land-based missile defense, supports homeland security, develops and maintains civil works throughout the nation, and in FY 2000 was engaged in over 68 countries. The Army contributes to the National Security Strategy and National Military Strategy by enhancing global stability through the tenets of shape, respond, and prepare, and is transforming to ensure it can continue to meet the requirements of peacetime engagement, crisis management, deterrence, and should deterrence fail, fighting and winning decisively. The Army will continue to be, as always, fielded and trained for the most demanding of missions—warfighting. In concert with this requirement, the Army must maintain its readiness now and in the future to provide the capabilities the National Command Authorities need to maintain the nation's global leadership. The Army will meet every challenge, as it did in the last century, and as it is doing with increasing frequency today.

PEOPLE—THE CORE OF THE ARMY

Wherever you look today, from Korea to the Sinai, the Army is a visible and powerful symbol of America's most cherished principles and ideals in action. Awe-inspiring and unique, the talent, drive, initiative, values, and intelligence of its personnel are the critical underpinnings for its capabilities. The courage, bravery, and selfless service of Army soldiers are an inspiration and example to people around the world. The special commitment by all soldiers and their families is what makes soldiering an affair of the heart. Those who serve do so because they believe in the profession, they believe in the Army, and most essentially, because they believe in each other. The Army is about trust, soldier to soldier, leader to led, unit to unit, the Army to the American people.

The Army creates and fosters values by continuously training and educating the nation's young people and giving them the opportunity to grow and improve as leaders and soldiers. Growing leaders is the most important thing the Army does in peacetime. For the future, training and education will be essential to maintaining the decisive battlefield edge as weapons systems become more technical and as doctrine and tactics continue to change. The need to recruit highly-educated, technologically savvy soldiers will not diminish in the future given the demands of the Army's sophisticated weaponry and logistical and communications systems. This year, the Army took steps to meet its recruitment and education needs by launching an innovative, 21st century education initiative—the Army University Access Online Program—that once in place will make the Army the largest provider of online access to higher education in the nation. This program will reduce the barriers to getting a college education and allow soldiers and, eventually, their families to access education and the opportunity to earn a degree online anytime, anywhere. This innovative, state of the art educational program is just one of the Army's key investments in its most critical asset—people.

Investments in soldiers and families are a key component of ensuring dominance today and tomorrow. Pay initiatives and the emphasis on recruiting enabled the Army to reach 100 percent of its retention and

recruiting goals Army-wide. A 22 percent turnaround overall in recruiting is a direct result of the increased emphasis on the soldier. Initiatives to improve well being for families are essential to continued retention of soldiers. Soldiers and their families are entitled to the same quality of life as is afforded the society they pledge to defend. Through privatization initiatives in housing and other areas, the Army is focusing on providing the well being necessary to retain soldiers by providing amenities comparable to those available in the private sector. The Army initiative to privatize housing is being evaluated at four installations. The Army is committed to bringing barracks and overseas housing to higher standards. The Army recognizes that taking care of soldiers and their families is inextricably linked to readiness and the Transformation.

READINESS—IS NON-NEGOTIABLE

The Army provides combatant commanders robust, ready, and disciplined formations to accomplish military operations which range from day-to-day engagement activities to crises requiring the application of force. Some of these deployments have been brief; others have evolved into ongoing commitments of the force. In FY 2000, the Army averaged 26,621 soldiers deployed in 68 countries for operations and training missions. In addition, there are approximately 124,800 soldiers forward stationed in 106 countries including 115,700 active and 9,100 reserve soldiers. Because of the Army's mission to support combatant commands and its mandated role as the nation's land component for warfighting, readiness is non-negotiable. Those two demands—day-to-day engagement and constant warfighting readiness—are in tension. Army forces must remain credible in their combat fighting ability to ensure it minimizes the risk to a national treasure—America's sons and daughters. To maintain this credibility, the Army examined how it allocated its personnel resources and, as a result, began to reevaluate the method used for measuring force readiness, instituted the Manning Initiative, and continued to expand the use of the reserves to ensure it can meet long-term requirements.

Given the complexity of today's strategic environment and the resulting increase in operational requirements across the spectrum of military operations, the Army will institute new ways to measure readiness in order to provide the National Command Authorities and combatant commanders with a better gauge of its capabilities. For near-term readiness, the definition includes items which affect the overall capability of units to deploy such as personnel tempo (PERSTEMPO); training enablers including training ranges, institutional support, and depot maintenance; full time support to the Reserve Components; and installation support. For long-term readiness, the definition includes those items which foreseeably will affect the Army's ability to retain personnel, such as facilities upkeep and well being initiatives, and to maintain weapons overmatch capability through recapitalization of aging equipment and modernization.

The Manning Initiative responds to the requirement to ensure the first-deployed units, the warfighting divisions and cavalry regiments, are at the highest state of personnel readiness. These units respond to a wide range of missions but the increased frequency of mission requirements has had detrimental impacts, especially in terms of personnel tempo and force turbulence. In FY 2000, the Army began redistributing personnel resources within the existing force structure to ensure full manning of its divisions and cavalry regiments. Higher readiness was achieved in these units while personnel shortfalls were concentrated in the institutional Army. This shift in personnel resourcing revealed a potential Army endstrength gap to meet the full spectrum of requirements. Based on requirements for near-term readiness (manning warfighting units) and long-term readiness (training and recruiting personnel, developing doctrine, and maintaining equipment and installations), current Army endstrength does not permit all manning

requirements to be filled. The Manning Initiative is succeeding in ensuring that the Army's tip of the spear units are ready, but at the considerable cost of undermanning in other units and the Institutional Army.

The Army's increased use of the Reserve Components on operational missions has helped meet the increased operational demands of the last few years. The shift of the Army from the Cold War mentality of reserves in waiting to today's environment of reserves in action demands a more integrated and interoperable Army, one in which reserves must maintain the same level of readiness as other forces. The Reserve Components comprise 54 percent of the total Army. They provide the Army with 60 percent of combat, 57 percent of combat support, and 69 percent of combat service support force structure. In FY 2000, the Reserve Component played an increasingly important role by meeting previously pure active component missions. This past spring, the Army National Guard's 49th Armored Division assumed the mission for the Multinational Division (North). This was the first time since World War II that a Reserve Component division headquarters has led active component forces conducting operational missions. Reserve force integration in exercises in Macedonia, Moldova, East Timor, Korea, Peru, and Belize demonstrate to America's allies the true total force readiness the Army possesses. In the future, every third peace-keeping rotation in the Sinai will be performed by the Reserve Component. The Army will expand the program in which Regular Army officers command reserve battalions and Army National Guard and Army Reserve officers command active battalions. The Army has continued its forward movement on multicomponent units as well. The Army is committed to optimizing the use of the Reserve Component in executing operational missions in order to maintain readiness and to ensure an integrated, seamless force.

GLOBALLY ENGAGED—RESPONDING WHEN CALLED

The Army maintains its readiness to ensure it supports the nation's security through joint integrated operations to shape the international environment, respond to crises, and prepare for an uncertain future. National security strategy has evolved to encompass more than fighting and winning wars. It now includes preventing wars by active engagement around the world. The Army is the principal engagement force for the nation and the military service that performs the largest share of humanitarian assistance, peacekeeping, and military-to-military engagements. Its complex organization lends itself to the variety of the missions to which Army soldiers are deployed daily. By maintaining a forward presence in Europe, the Pacific, and Southwest Asia, the Army promotes regional stability, gives substance to America's security commitments, prevents the development of power vacuums and instability, and contributes to deterrence by demonstrating determination to defend national, allied, and friendly interests in critical regions. The Army's boots on the ground span missions from presence and peace enforcement operations that deter aggression and bring peace and stability to troubled regions; to training and educating old allies and new partners to strengthen bonds of mutual respect and understanding; to exercises that demonstrate resolve and enhance interoperability.

In Europe, the Army's 62,000 forward-stationed and 9,000 deployed soldiers are engaged in multiple operations and exercises that contribute to the stabilization of the region and to assist in the Balkans. In Bosnia-Herzegovina, Army soldiers in NATO-led multinational formations work in concert with military units from Russia, Ukraine, Poland, Turkey, Greece, Norway, the United Arab Emirates, and Jordan to restore peace in a multiethnic society and to help create an environment that makes life more normal each day for the people of this ravaged area. In Kosovo, where the rule of law is not firmly established, soldiers provide a safe and secure environment for Kosovars, whether ethnic Albanians or Serbs. An Army division provides the command authority for the Multinational Brigade (East) sector in which U.S. soldiers work

side by side with soldiers from Russia, Poland, Greece, Ukraine, and the United Arab Emirates to patrol the roads and villages. From Tunisia to Norway, Army soldiers participated in 39 major exercises and a host of engagement activities to prepare soldiers and leaders for coalition combat. Among these exercises was a multinational disaster response exercise in Romania involving 10 other nations and a 16-nation exercise in the Ukraine designed to enhance interoperability in peacekeeping operations. Throughout last year and into the future, the Army will build cooperation, enhance stability, and promote interoperability with allies and potential allies for regional security, demonstrating U.S. global leadership.

In the Pacific, where the majority of Army soldiers are on the Korean peninsula, deterrence through warfighting readiness is the top priority. Soldiers continue the commitment made over 50 years ago. Standing with Korean allies, soldiers maintain the armistice through a steadfast vigilance and exercises to build the combined coalition. Annual exercises like Ulchi Focus Lens and Foal Eagle validate war plans, build warfighting prowess and demonstrate resolve. Elsewhere in the Pacific, Army soldiers participated in exercises throughout the year with treaty partners, in army-to-army exercises and in partnership events in Australia, Thailand, the Philippines, Malaysia, Singapore, Korea, and Japan. The lessons learned from these coalition operations influence training and fighting concepts, not only now but also potentially in the future. The bonds of mutual respect and understanding with foreign armies as well as sister services that engagement provides, along with improved interoperability with and accessibility to strategic countries, continue to demonstrate U.S. resolve to support security and humanitarian interests of friends and allies in the region.

Throughout the volatile region of Southwest Asia, the Army continued its deterrence role and its efforts to build stronger coalition capabilities. The Army maintains its presence in support of UN activities to deter further Iraqi aggression and assure Kuwait and other nations in the Persian Gulf region regarding U.S. resolve. In Kuwait, the Army alternates command with the U.S. Marine Corps for the standing coalition/joint task force for the security of Kuwait, overseeing Army infantry security forces, PATRIOT air defense units, and staff elements that work with military forces from the United Kingdom, Australia, and New Zealand. In the nation's longest continuous engagement, the Army completed the 38th and 39th Multinational Force and Observers rotations in the Sinai. In Egypt, 4,500 U.S. Army soldiers, including Army National Guard units from Arizona, Louisiana, Montana, and Nevada, participated in a large scale multinational exercise with Egyptian forces and participants from the Persian Gulf states, France, Germany, Italy, United Kingdom and the Netherlands. This exercise along with others reinforces the U.S. commitment to provide global leadership by working with other nations to increase interoperability, demonstrate combined resolve against threats, and retain regional accessibility for coalition forces.

Throughout the world and at home, the Army's operational flexibility gives it the ability to respond with tailored forces to meet a variety of challenges, from disaster relief to training of military forces. Whether disaster relief or nation building, the Army has the range of forces to execute operations extending from humanitarian and civic assistance activities, building civil projects, to providing medical care in the U.S. and abroad. In the United States, the Army supported civil authorities, states, and national agencies in all fifty states to combat wildfires and conduct assistance and community support following tornadoes, hurricanes, winter storms, and floods. Reserve forces also provided domestic support to 33 states, conducting 203 projects such as health service and medical support and construction in cooperation with civil authorities. Globally, the Army provided water purification and helicopter lift capabilities after natural disasters struck Venezuela, South Africa, and Mozambique in order to ensure crisis situations did

not worsen. In Central and South America, Army Reserve medical readiness deployments treated 108,000 patients; and in the Pacific, engineer and medical assistance teams built bonds of friendship in Micronesia and Timor. To build internal capabilities in nations that are recovering from wars, such as Yemen, Army soldiers trained indigenous personnel in demining operations to assist in removing this threat to the civil populace. Responding to crises will continue to provide a wealth of experience for soldiers, build support for U.S. leadership, and provide a bond of friendship at home and around the world for the nation.

To stimulate self-reliance, the Army teaches and trains foreign military personnel both on location and in the United States, exporting its expertise and the example of the healthy command relationship that exists between the military and civilian leadership. In Nigeria, Army teams conducted brigade-level training in support of the African Crisis Response Initiative to enable African forces to rapidly assemble and conduct peacekeeping operations throughout the African continent. In South America, soldiers are training Colombian armed forces in counterdrug operation tactics and techniques. This effort is in addition to ongoing support efforts in Honduras and the Caribbean to counter drug trafficking. At Army schools in the United States, the Army provides personnel from other nations the same high quality, professional military education that produces the finest leaders in the world. The U.S. Army School of the Americas, chartered to develop and conduct professional military education for the armed forces of the Caribbean and Latin America, closed in December 2000. A new Department of Defense institute, which will have an increased emphasis on professionalism, human rights, and civil-military relations, will open in January 2001. The institute will meet U.S. interests by offering Spanish-language based professional military education for America's allies in the Western Hemisphere with an enhanced program focused on strengthening democracy and meeting the new threats of the 21st century. Whether through training, a forward posture, or continued participation in global exercises, the Army will remain engaged and will continue to provide leadership around the globe in support of the nation's security.

In today's strategic environment, the Army must be ready—to initiate combat on America's terms, to build momentum quickly, to retain the initiative, and to win decisively. To ensure it is ready to fight and win the nation's wars, the Army conducts its own training and participates in exercises around the world. In FY 2000 the Army trained over 82,000 soldiers at Combat Training Centers (CTC). CTCs train units to the rigorous standards required in combat and enable the Army to simulate operations in a wide variety of conditions from low-intensity peacekeeping to high-intensity mechanized warfare. Tough, realistic training at these centers—the National Training Center at Fort Irwin, California, the Combat Maneuver Training Center at Höhenfels, Germany, and the Joint Readiness Training Center at Fort Polk, Louisiana—provide soldiers and leaders with advanced unit training in an intense learning environment. Annually, the centers also train up to seven rotations of allied soldiers, providing the same high quality training that make Army soldiers the best ground force in the world. Just as CTC training enhances readiness, so do operational deployments and exercises. Exercises allow the military to work as part of a joint, combined, interagency, and/or bilateral force with non-governmental organizations. In FY 2000, Army participation demonstrated its capability to support operations in joint exercises with the U.S. Marine Corps for integrated forced entry operations, joint health service support operations, joint logistics over-the-shore operations, and joint task force staff headquarters training. These training opportunities hone the agility and flexibility of the Army in responding to the broad scope and multifaceted complexity of operations. The Army increases its capability to execute globally and refines tactics and techniques needed as the Army transforms for the future.

PREPARING NOW—TRANSFORMING FOR THE 21ST CENTURY

As the Army meets near-term requirements it must prepare for the long-term. To remain *persuasive in peace and invincible in war* requires that the Army actively manage change within itself to maintain current readiness and lay the groundwork for future readiness. The Army must transform in order to develop and field a formation that possesses the force characteristics to retain its preeminence as a ground force. Army transformation will result in a more responsive, deployable, agile, versatile, lethal, survivable, and sustainable force. The Army is synchronizing its Transformation with the National Security Strategy, the National Military Strategy, Joint Vision 2020 and the upcoming Quadrennial Defense Review. The Army recognizes Transformation requires more than just technological change to generate future success. The Army is also evaluating organizational and conceptual changes and how to grow the flexible and innovative leadership the Army must have to succeed. The Army does not have all the answers today; but it began by asking the right questions, and it is going where the answers are leading. So far, the Army is moving out on Transformation with strong bipartisan congressional and Department of Defense support. Transformation is following three principal axes—the Legacy Force, the Interim Force, and the Objective Force—to give the Army the capability to meet readiness requirements now, modernize for the future, and provide commanders the force that will keep the Army the premier ground force for the 21st century.

Throughout the Transformation, the Army must continue to meet its requirements. To do so, the Army will sustain its Legacy Force by maintaining, modernizing and recapitalizing the force to preserve its strategic agility, overseas presence, and power projection capabilities. In FY 2000, the Army identified 21 key armored and aviation systems in the active and reserve components to be recapitalized to extend service life, reduce operating and support costs, and improve system reliability, maintainability, safety, and efficiency. The digitization initiatives and technological advances from Army Warfighting and Division XXII experiments will provide upgraded capabilities. The Legacy Force will maintain the capabilities the Army currently has plus improve selected others that are already scheduled in order to sustain combat overmatch against likely threats. The trained and ready Legacy Force will provide a credible deterrent against challenges to U.S. interests and ensure required readiness and capabilities are available during Transformation.

The Interim Force will bridge the gap between the Legacy and Objective Forces. A key component of the Interim Force is the Initial Brigade Combat Teams (IBCT), the first of which the Army organized and fielded at Fort Lewis, Washington. The IBCT will give the Army an enhanced capability for operational deployment to meet worldwide requirements and will validate an organizational and operational model for the Interim Force. Congress provided an additional \$750 million over the President's Budget request in support of the IBCT concept. The Army will use the money to field the second IBCT in FY 2001 and to procure an Interim Armored Vehicle as the principal platform of the Interim Force. The Army is programming the funding for an additional IBCT each year through FY 2007. The Army will train soldiers and grow leaders in the doctrine and organization of these new IBCTs in order to be able respond to operational requirements and provide strategic deterrence and response options for the National Command Authorities.

The Army has made great strides this first year towards the Objective Force. The additional \$3.2 billion from Congress will continue the momentum for Transformation. To accelerate the transition, the Army has undertaken ambitious initiatives in the development of the Objective Force's technological centerpiece—the Future Combat Systems (FCS)—by entering into a cooperative effort with the Defense Advanced

Research Projects Agency to mine critical technologies necessary for FCS recommendations and development plans by FY 2003. These recommendations will lead to a detailed design and demonstration phase for engineering, manufacturing and development for the FCS by FY 2006 and ultimately to the first unit equipped by the end of the decade. The Army's investment now will provide, after eight to ten years of development, the new technologies behind FCS capabilities. When technologies are mature and when the production lines are ready, the Army will begin fielding the Objective Force in unit sets. Organizations will field complete suites of new equipment--thoroughly integrated systems designed to give us all of the capabilities outlined in *The Army Vision*. Over the course of the next 15 to 20 years, the Army will transform itself into the Objective Force.

CONCLUSION

The Army, its Vision, and its Transformation begin and end with people. The Army remains *on point* today; soldiers ready to stand against the forces that would threaten U.S. interests and global leadership. Soldiers ensure the Army remains the globally dominant land force today—shaping, responding, and preparing are the common threads through the Transformation. People ready to face the intellectual challenges of doctrine, organization, and technology in the future will be the difference in maintaining readiness. To ensure that the Army remains the most prepared and best trained military force in the world, enhancements to compensation, retention, recruiting, well being, education, health care, and family programs will be given a high priority. While equipment is important, the Army is, and will remain, about people. The character, values, and professionalism of its soldiers and leaders continue to provide this nation its decisive force. The Army will always remain ready for the nation—persuasive in peace, invincible in war.

REPORT OF THE SECRETARY OF THE NAVY

The Navy and Marine Corps provide the Nation with a flexible and joint instrument of security policy with which to promote stability, project maritime power landward, and exercise American sovereignty abroad. Naval forces shape the global security environment; help assure access to regions of vital interest; and permit timely, and frequently, the initial crisis response from the sea. The ability to reassure friends and allies, deter, and, when called upon, engage in combat at all levels of intensity makes the Navy-Marine Corps team especially useful to the Nation in peace, crisis, and war.

JOINT FORCE COMMITMENT

Naval forces are an important component of the Joint Force. While independent naval operations will at times be appropriate, most crises and conflicts will involve Joint Task Forces to achieve the most effective use of all the Nation's military forces.

THEATER ENGAGEMENT SUPPORT

In peacetime, including times of “violent peace,” the Navy and Marine Corps are an important and visible part of the *engagement* element of the National Security Strategy (NSS). Likewise, they contribute tangibly to the *shaping* aspect of the National Military Strategy (NMS) that supports the NSS. Forward-deployed naval forces are present continuously around the world, regularly using the sea-lanes through which international commerce and key resources like oil flow. They interact frequently with their overseas counterparts, building and sustaining friendly relationships with regional partners. As theater Commanders in Chief (CINCs) develop their comprehensive Theater Engagement Plans (TEP) in support of the NSS and the NMS, the Navy and Marine Corps play particularly important roles in TEP execution by virtue of their regular forward presence.

COMPONENTS OF THE JOINT FORCE

Naval forces are committed to and are an indispensable part of the Nation's Joint Forces. The warfighting concepts and capabilities of potential future adversaries—especially anti-access strategies—are of special concern, should the United States become engaged in overseas conflict. Asymmetric and conventional threats, many stemming from the ever-growing availability of commercial technologies with direct military applications, have the potential to make projection of joint forces increasingly challenging, particularly during the early phases of a conflict as these forces flow from the continental United States to the theater involved.

Projecting U.S. power and influence from the sea, to directly shape events ashore, while maintaining freedom of the seas is the essence of the Navy and Marine Corps' contribution to national security. At their core, naval forces are a potent and, indeed, deadly warfighting asset for the theater CINC. These forces can be scaleable, such as in the form of cruise missile/air strikes or in the form of Marine Air Ground Task

Forces (MAGTF) that can be rapidly inserted ashore. Because they are readily sustained on the scene, either visibly, over the horizon or under the seas, they give our National Command Authorities hours, days, weeks, and even months to gain intelligence, conduct diplomacy, avert crisis, build coalitions, or, if necessary, act decisively. Further, naval forces can exploit the freedom of maneuver afforded by the seas to respond to contingencies around the world.

In helping to shape the theater environment through ongoing engagement with regional partners—facilitated by nearly constant presence and the inherent ability to rapidly and forcefully respond in the event of crisis or conflict—naval forces underpin access as a prerequisite for the timely and secure arrival of other joint forces. Absent sea-based naval forces to maintain or seize access venues promptly, U.S. options in response to crisis or conflict are constrained.

The role of joint force enabler is but one operational contribution. Improving the ability to access and protect air- and seaports of debarkation, intermediate staging bases, strategic “hub” ports and other important assets are all important operational requirements. Continued investments in sea-based defense against ballistic and cruise missiles, effective counter-mine and anti-submarine capabilities, the ability to rapidly locate and strike important adversary forces, weapons and sensor systems, and control of the seas and the airspace over them are essential for the Joint Force to operate effectively. And, the Navy assures the flow of the vast majority of logistics to sustain forces once ashore. To this end, the Navy has made, and continues to make, a significant investment in sealift.

The Navy and Marine Corps have a long history of operating jointly, and are working in a variety of ways to foster even closer integration. Both also are deepening their links with sister Services. The Marine Corps is working closely with the Army on future land warfare issues, while the Navy and Air Force conduct regular warfighter conferences and other activities to improve interoperability as part of the larger goal of seamless, coherent joint operations.

OPERATIONS IN 2000

The year 2000 saw rotational naval forces constantly “on station, on call” worldwide, supporting ongoing joint operations and theater engagement efforts.

As in 1999, five Aircraft Carrier Battle Groups (CVBGs) and five Marine Expeditionary Units (MEUs), embarked in Amphibious Ready Groups (ARGs) deployed during the year, manned by more than 55,000 Sailors and Marines. Similarly, 30,500 Marines were deployed or based forward in support of other operations.

Although there is undeniable risk while engaging in Southwest Asia—as evidenced by the terrorist attack on the *USS COLE*—the presence of naval forces provides a strong symbol of support and stability for our allies while also signaling resolve to those who potentially threaten our regional interests. We maintained a continuous carrier presence in the Arabian Gulf throughout 2000. Importantly, all of the CVBGs that operated in the Gulf last year, and, along with shore and sea-based Navy and Marine Corps aircraft, conducted combat operations in support of Operations NORTHERN and SOUTHERN WATCH, striking numerous targets in the respective “No Fly” zones. Similarly, Fifth Fleet surface combatants continued Maritime Interdiction Operations in support of the United Nations' economic sanctions against Iraq for the

tenth straight year. Marines from the 15th and 22nd MEUs, embarked in the *BONHOMME RICHARD* and *WASP* ARGs respectively, participated in training and exercises with friends and allies throughout Southwest Asia.

Likewise, our forward-deployed naval forces based in Japan continued to project U.S. influence in East Asia, the Indian Ocean, and the Arabian Gulf through overseas presence and visible engagement activities. Operating forces from Marine Forces, Pacific (MARFORPAC) supported the U.S. Liaison staff to the U.N. Transition Assistance program in East Timor, transporting thousands of tons of humanitarian supplies and building materials. Navy Seabees from Navy Mobile Construction Battalion 40 and Navy Medical Corps personnel deployed to East Timor and conducted various humanitarian and civic action activities. MARFORPAC and Sailors from the Navy's Seventh Fleet also exercised and operated with the forces of several nations in Southeast Asia.

In other activities, combat-ready Marines, deployed in ARGs assigned to the Sixth Fleet, provided peacekeeping forces in Kosovo and served as the Joint Task Force Commander's ready reserve. Marine Fleet Anti-Terrorist Security teams deployed to Cuba, Yemen and Bahrain on short notice to provide enhanced force protection to forward-deployed forces during high threat periods. Other Marine elements deployed to several South American countries, participating in riverine and small unit training with host nations.

Navy and Marine Corps Reserves provided more than two million man-days in support of the Active force in 2000. Reserves, including Reserve aviation units and Special Operations Reserve personnel, contributed significant support to counter drug operations, both from bases in the United States and overseas. Navy and Marine Reserves also supported many other efforts, including support to Operations NORTHERN WATCH and SOUTHERN WATCH, civil affairs and other activities in Bosnia and Kosovo.

READINESS

QUALITY OF SERVICE

Quality of Service is a balanced combination of both Quality of Life and Quality of Work. Some aspects are tangible, such as adequate compensation, a guaranteed retirement package, comprehensive health care, and other benefits associated with traditional Quality of Life programs. Others, however, are intangible—and in some ways more important. Indeed, they are cardinal factors that make a career in the Naval Services attractive to talented people relative to other options they may have.

These intangibles—job satisfaction, ongoing professional growth, high quality training and education, personal recognition, confidence that they will have the tools necessary to succeed in combat, and a belief that the Nation will fulfill its promise to them and their families—comprise crucial elements of the Quality of Service. Sailors and Marines draw great personal and professional pride and satisfaction from what they do throughout their service to the Nation. In turn, they deserve the unambiguous support of the Nation they serve so that they know that what they do is important and worth the personal sacrifices they make and the opportunity costs they incur.

RETAINING OUR BEST PEOPLE

Improving the Quality of Service, including enhanced financial compensation, greater advancement opportunities, and personnel tempo kept within established goals, is fundamental to higher retention. Through training and education, the Nation has invested a great deal in our Sailors and Marines, enabling them to operate and maintain complex systems and, if called up, to win in combat. A healthy retention rate reduces training costs, lowers recruiting requirements, and contributes heavily to operational readiness. So, it is important that we give our people compelling reasons to stay—and not to lose them early in their service. Programs such as the Navy's Center for Career Development and the Bearings program, and the Marine Corps' Crucible and Unit Cohesion programs have been developed to increase our first term attrition posture.

Although Navy enlisted retention during 2000 was below the Department's annual target, the Navy retained enough Sailors to end the year about 1000 personnel over end strength. Short-term extensions, however, contributed to a higher retention rate, especially among first-term Sailors. Current enlisted retention for the Marine Corps is relatively stable. In 2000, the Marine Corps achieved reenlistment rates necessary to meet its goals for transition of first-termers to the career force. Improved retention tools, including the triad pay package, higher reenlistment bonuses, and better advancement opportunities all are contributing to the Department's retention efforts. Additionally, the Navy has continued to reduce the number of gapped billets at sea from a peak of 18,000 to less than 8,000 by the end of 2000.

In FY 2000, Marine Corps officer retention improved substantially, due to targeted incentive pay programs. For the Navy's officer corps, low retention rates, coupled with smaller than normal junior officer year groups, have resulted in required retention levels significantly higher than the historical norms, particularly in our warfighting communities. As a result of increases in special and incentive pays which targeted specific problem areas such as aviation, surface warfare, and special warfare, we are seeing some early positive indicators. However, we must remain concerned that submarine and surface warfare officer retention continues to fall short.

RECRUITING OUTLOOK

The Marine Corps has met or exceeded its accession goals since June 1995. Aggressive recruiting techniques allowed the Marine Corps to exceed its quotas and to improve its delayed program numbers. To maintain a successful recruiting stance in the future, the Marine Corps is restructuring the locations of its recruiters to more effectively solicit target populations. The Navy met its accession mission and end-strength requirements in FY 2000. Several initiatives contributed to this positive trend, including increasing the recruiting force; expanding the number of recruiting stations; increasing financial and educational incentives, such as the Navy College Program; and re-focusing the Navy advertising plan. The recruiting environment, however, remains challenging. While the Navy met its accession requirements for FY 2000, it was not able to improve its recruiting posture entering 2001 as the Delayed Entry Program numbers continue to remain lower than desired.

CIVILIAN RETIREMENT BOW WAVE

In the next five years, 47 percent of the Department's engineers, 55 percent of its scientists, 70 percent of its computer specialists, and 64 percent of its contract specialists will be eligible for retirement. In an age of rapid technological change, the Department must attract top-notch talent, especially in areas such as

Research and Development. Multiple, innovative recruitment and retention strategies designed to attract and retain young college graduates are needed. As an example, the Marine Corps chartered a Civilian Career Advocacy Board to focus senior level attention on workforce development and management issues. The Board is designing civilian career tracks within functional specialties.

SMART WORK

Smart Work encompasses a host of initiatives that capture new technologies, seek better ways of doing business, and follow through on commitments the Department has made to its people. For example, the Smart Manning concept seeks to achieve workload reduction through better use of manpower and enhanced training improvements. Substitution of capital for labor for example, allows the Department to commercially contract labor-intensive tasks such as painting, food and hotel services, and some administrative tasks. Last year, the Navy contracted paint and preservation availabilities for 50 ships, saving over 50 man-years of labor. Sailor and Marine time is reserved for high value-added work and combat training—the sorts of things they joined the Naval Service to do.

The imperative to work smarter continues to be addressed by the Navy's Inter-Deployment Training Cycle (IDTC) Workload Reduction Initiative. Training and inspection requirements, while worthwhile, over the years became a burden on Sailors' time, generating a major Quality of Service issue for them and their families. This highly successful initiative has helped to relieve the load on non-deployed crews. As more measures come on line, Sailors can expect more time to focus on developing unit and individual readiness.

Commanding Officers have enhanced control and flexibility to maintain combat readiness. Placing authority and decision-making at the appropriate levels both enhances combat effectiveness and increases the attractiveness of a naval career. This heightened sense of responsibility at all levels lies at the heart of job satisfaction. It is key to retaining our best and brightest people.

PROFESSIONAL DEVELOPMENT

The likely tempo of future operations will test our Sailors' and Marines' abilities to innovate, adapt, and apply their knowledge and experience to dynamic situations. Continuous learning will be necessary for keeping Sailors and Marines on the cutting edge as well as maintaining a high Quality of Service. Programs such as the Navy College Program, the Marine Corps' Lifelong Learning Program, the Department of the Navy's International Affairs Program, and the Defense Leadership and Management Program reflect the Department's emphasis on career-long education and training.

DEPLOYED VERSUS NON-DEPLOYED READINESS

The Navy and Marine Corps provide forward deployed, combat-credible expeditionary military forces on a rotational basis using a Joint Chiefs of Staff-led apportionment process. We do that and do it well. But there are indicators that point toward less ready forces in the IDTC. In the broad view, IDTC readiness is partly a result of fiscal constraints as well as management decisions necessary for a rotational force. While the Department expects non-deployed readiness to be lower than our deployed forces, it has become more and more apparent that deployed readiness is being maintained, to a greater or lesser degree, at the expense of non-deployed forces.

The Naval Service's focus is to ensure deployed readiness remains high. Consequently, non-deployed forces bear the brunt of any shortfalls in funding and other readiness-related decisions. For example, non-deployed units often have to defer ordering parts, delay or down-scope maintenance, and remain lower on the priority list for critical personnel. Sometimes, these units are forced to cross-deck both properly trained personnel and operationally significant material to support those units that are next in line for deployment. Although the readiness of non-deployed forces will never equal deployed forces, a negative trend in non-deployed force readiness will eventually affect deployed force readiness, not to mention surge force capability.

MODERNIZATION

Modernization, the upgrading of existing systems, enables the Department's older forces to continue to be valuable assets. Similarly, shore infrastructure rehabilitation and modernization is needed to maintain adequate support levels to the operating forces, reduce maintenance costs, and take advantage of new technologies to realize efficiencies and reduce costs.

Although the Department is placing renewed emphasis on exploring how it can optimize current modernization efforts and extend the life of several proven platforms and systems, the Navy and Marine Corps are still not able to meet many important modernization objectives. For example, the combined challenge of meeting current readiness requirements and investing in key future capabilities has slowed the pace of the Navy's modernization efforts to all but safety-of-flight, safety-of-ship, and relatively near-term readiness-related Navy programs. To cover all of its modernization programs, the Marine Corps projected that a sustained topline increase of \$1.8 billion per year through FY 2007 would be required. These requirements cover ground equipment maintenance and procurement, modernization of aviation platforms, research and development, and infrastructure, including family housing, Military Construction (MILCON) and BMAR.

RECAPITALIZATION

The Department continues to invest in new capabilities, provide systemic replacement for aging platforms, and, to some extent, maintain the economic viability of the industrial base that supports the Armed Forces. There is evidence, however, that in recent years the Department has maintained its near- and mid-term readiness at the expense of investments in longer-term capabilities. Resolving this tension between current imperatives and long-term requirements has been, and will remain, a challenge. In fact, what was once a far-off issue is now a matter of some urgency. The Department is challenged to find funding to keep current and future shipbuilding and aviation plans on track.

Nonetheless, substantial investments are being made in those programs that will make up the core of the Department's forces in the next ten to fifteen years. The *ZUMWALT*-class destroyer, F/A-18 E/F Super Hornet, Joint Strike Fighter, CVN-77, CVN(X), MV-22 Osprey assault support aircraft, *VIRGINIA*-class SSN, LHA replacement, the *SAN ANTONIO*-class LPD-17, and the Advanced Amphibious Assault Vehicle (AAAV) are examples of important naval assets for the near future.

LIFT REQUIREMENTS

The Marine Corps amphibious lift requirement remains at 3.0 Marine Expeditionary Brigades (MEBs). The current plan focuses on the formation of 12 ARGs, which achieves the fiscally-constrained

amphibious lift goal of 2.5 MEBs. It shapes the future amphibious force with the number and type of ships required for a flexible, crisis-response capability. The planned force ultimately will form 12 integral ARGs or smaller sized elements operating independently when required.

The Department's strategic sealift assets include ships earmarked for rapid surge deployment of forces from the U.S. and ships designed to maintain afloat prepositioned stocks worldwide. These sealift assets support all four Services as well as the Defense Logistics Agency. To complete the Department's strategic sealift program, twenty Large Medium Speed Roll-on/Roll-off ships are being delivered through FY 2002, adding approximately five million square feet of lift to current surge and prepositioning capacity.

Each of the three Maritime Prepositioning Squadrons carry unit equipment and supplies to support a Marine Expeditionary Brigade for 30 days of combat. The Department continues to pursue our Maritime Prepositioning Force Enhancement (MPF(E)) and Maritime Prepositioning Force Future (MPF(F)) programs. With the fielding in FY 2000 of the first of three ships, the MPF(E) program is adding one ship to each squadron enhancing Navy Fleet Hospital, Naval Mobile Construction Battalion and Expeditionary Airfield capabilities. MPF(F) will combine the capacity and endurance of sealift with enhanced speed and flexibility of airlift to marry-up forces and equipment in a forward area. With onboard cargo handling systems compatible with existing MPF ships and commercial systems, we will increase the speed and efficiency with which we reinforce our assault echelons ashore.

INFRASTRUCTURE AND ENVIRONMENTAL CHALLENGES

The overall quality of infrastructure has declined. Only select facilities (bachelor quarters, utilities, and waterfront, airfield, and training facilities) are maintained at high conditions of readiness. Projects intended to replace aging infrastructure or allow for facility consolidation are often deferred to support more pressing near term requirements. Shore support structure is too large for the combat force levels directed by the 1997 Quadrennial Defense Review (QDR). Critical MILCON and Real Property Maintenance projects have been deferred which will result in increased out-year funding requirements. The backlog of Maintenance and Repair Projects is projected to grow by 237 million dollars, crossing the four billion dollar threshold in FY 2001.

The Department continues its active program of environmental compliance and stewardship both afloat and ashore. We are pursuing research and development of technologies and innovative pollution prevention strategies to effectively meet our environmental requirements. This research recently focused on marine mammal protection, contaminated site cleanup, and hull paints/coatings. Environmental considerations are weighed when acquiring weapon systems and platforms, and are reviewed periodically throughout each program's life cycle.

THE FUTURE FORCE

21st century technology offers enormous opportunities to enhance warfighting capabilities. Even though expensive, we cannot afford to ignore emerging technology, both to mitigate risk and to take advantage of new possibilities. Seizing these opportunities at a reasonable cost requires efficient organizational alignment, systematic innovation, resolution of difficult interoperability and integration problems, and the steady pursuit of promising scientific and technological initiatives.

ORGANIZATIONAL ALIGNMENT

The Navy and the Marine Corps are taking measures to ensure they are properly *aligned*. By that we mean having all our organizations acting coherently—or in alignment—to achieve our overall objectives. The Department is shaping itself to extract the maximum advantage from the resources it is provided, and demanding a higher rate of return on its investments. For example, a separate staff now leads the Navy's warfare requirements generation process while the traditional resources and assessment group leads the requirements validation and programming and budgeting processes. The Navy has also established advocate organizations for Fleet and ashore readiness, to ensure that readiness issues have a higher profile in the Planning, Programming and Budgeting System process. Similarly, with the establishment of the Marine Corps Materiel Command (MARCORMATCOM), the Marine Corps is optimizing the ground materiel readiness of the operating forces. As the single point of contact for all readiness and materiel support issues, MARCORMATCOM provides the Marine Corps with “cradle to grave” management of all ground materiel assets.

EFFICIENCY AND INTEGRATION

With the awarding of the Navy Marine Corps Intranet (NMCI) contract in October 2000, the Department has embarked on a path to purchase information technology services similar to a utility, where a commercial team will build and maintain all aspects of the network. NMCI represents a consolidation of over 150 separate and stovepiped local area networks into a single, privately managed network, accessible to all certified users throughout the Department. The contractors will be responsible for updating the technology, resulting in our ability to keep up with emerging information technologies. Through economies of scale, the Department will acquire greatly improved intranet services for the same funding previously spent on numerous incompatible networks. With NMCI, we will establish a common end-to-end information system capability for voice, video, and data communications, increasing access, interoperability, and security for the Department.

In addition to the advantages leveraged by NMCI, the Department continues to pursue integration efficiencies in other areas such as warfighting doctrine, procurement strategies, and headquarters staffing. Our carriers and large-deck amphibious ships are being fitted with identical or similar communications and command and control subsystems resulting in improved speed of information flow between CVBGs and ARGs.

INNOVATION

The Navy and the Marine Corps continue to pursue initiatives to translate capstone concepts like *Network-Centric Warfare* and *Expeditionary Maneuver Warfare* into joint warfighting reality. The Naval Warfare Development Center's Maritime Battle Center and the Marine Corps Combat Development Command's Warfighting Laboratory explore candidate concepts, tactics, techniques, and procedures for the application of advanced technologies. Navy Fleet Battle Experiments and Marine Corps Advanced Warfighting Experiments test these new doctrines and ideas in the field, assess the utility of new technologies, and explore new operational capabilities and organizational arrangements. The empirical results are returned to the Development Commands or joint offices for further evaluation.

INTEROPERABILITY IMPROVEMENTS

The Services are making significant investments in fielding interoperable systems and migrating legacy systems into the netted world. Some key C4ISR systems in development include NMCI, Information Technology for the 21st century, the Cooperative Engagement Capability, the Single Integrated Air Picture, the Common Command and Decision System, the Global Command and Control System—Maritime, and the MAGTF Software Base Line. C4ISR systems for joint, allied, and coalition forces are being developed and coordinated to make interoperability a reality. Use of COTS technology, international standards, and common architectures offer opportunities to avert technology gaps with allies and provide the most economical course for achieving required capability.

RESERVE INTEGRATION

The effective integration of the Reserve component with active duty components is more important as demand for military forces increases and the active force stabilizes at 1997 QDR levels. The Department is starting to leverage the great potential in our Reserve communities better by identifying scenarios/roles that could cause short- or long-term activation of the Reserves. Many Reservists possess skills gained in the civilian workforce that can be called on when required by our Active forces. The Department is introducing a mechanism to identify the skill areas for which there is no active Departmental occupation counterpart. In addition to the value of their military specialty training and training for mobilization, Reservists provide an essential link to American society.

ADVANCED TECHNOLOGIES

Application of advanced technologies will yield warfighting and cost benefits for tomorrow's platforms. By using advanced technologies in our next generation aircraft carrier program, we anticipate total life cycle cost savings of 30 percent for the second carrier of that class compared with today's *NIMITZ*-class carrier, including a 20 percent reduction in manpower. The *ZUMWALT*-class destroyer will be the first major U.S. surface combatant designed as a single integrated power system with the potential to reduce manning, as well as operating and support costs by up to 70 percent. The design/build program being used in the *VIRGINIA*-class submarine program resulted in a stable design at the start of lead ship construction and should preclude costly design changes during construction. Additionally, the Department is making substantial investments in programs such as Unmanned Aerial Vehicles, Unmanned Undersea Vehicles, and integrated electric powering of propulsion, combat systems and ship services.

CONCLUSION

The recent past has shown that now, as ever, the Navy and Marine Corps play a critical role in the protection and advancement of U.S. interests around the globe. On-scene naval forces conducting peacetime presence or crisis-response missions frequently provide the first hard evidence of the Nation's national security policies and political will. To deter aggression, foster peaceful resolution of dangerous conflicts, underpin stable foreign markets, encourage democracy, and inspire nations to join together to resolve global problems, the United States must have, and in fact does have, a multi-dimensional, fully joint-capable maritime force that is ready to shape and respond anywhere, anytime around the globe.

REPORT OF THE SECRETARY OF THE AIR FORCE

The dawn of the 21st century finds the Air Force in the midst of an evolution—an evolution that began with the advent of manned flight in 1903 and continues on the path to the seamless integration of air, space, and information systems. To realize this vision, the Air Force is reshaping its forces, both manned and unmanned, to respond more rapidly, more precisely, and from greater distances than anyone thought possible, a decade ago. The Air Force is modernizing its space forces to enable joint operations while developing the capability to instantaneously monitor any activity of interest on, above, or below the surface of the earth. The Air Force is leveraging the power of emerging information technologies to gather, move, sort, fuse, attack, and defend information, ensuring decision dominance over potential adversaries anytime, anywhere. Finally, the Air Force is tightly integrating these air, space, and information systems to provide responsive, flexible aerospace power for America.

Although America's Air Force is well established on this trajectory, challenges remain. The increasing cost of operations, maintenance, and personnel programs is consuming the funds needed to modernize and fully realize the benefits of an integrated air, space, and information force. Key systems—missiles, bombers, tankers, airlift, combat search and rescue (CSAR), intelligence, surveillance, and reconnaissance (ISR) aircraft, and space systems—are aging, and the Air Force has little or no funding for replacements. The physical infrastructure that supports these systems is also steadily deteriorating. Perhaps more importantly, the robust economy, fueled by the peace dividend, makes recruiting and retaining a skilled professional all-volunteer force extremely difficult.

Each of these challenges is compounded by an unprecedented demand for aerospace power, as seen in the skies of Iraq and the former Yugoslavia and on the ground in East Timor, Mozambique, and over 60 other countries; all required to protect the sovereignty and interests of the U.S. while providing homeland security against new, asymmetric threats. These demands, in turn, place significant burdens on the Air Force's finite resources, particularly its people.

The Air Force answered some of these challenges by reorganizing its deployable forces into ten Aerospace Expeditionary Forces (AEF), rotational units of relatively equal combat capability. This Expeditionary Aerospace Force (EAF) concept provides the Joint Force Commander a trained-to-task, tailored force, while giving Air Force personnel more stability and predictability regarding their deployment schedules. The other challenges, however, can be addressed only by increasing resources, reducing infrastructure, decreasing commitments, or accepting higher risk. The Air Force must recapitalize (modernize or replace) its bomber, tanker, airlift, missile, CSAR, ISR, and space systems. It must shed excess real property and find resources to adequately maintain what remains. It must leverage the rapid technology cycle of evolving information systems. Most importantly, it must adequately compensate, both tangibly and intangibly, its people—Active Duty, Guard, Reserve and Civilian—to retain the right number and proper mix of skilled personnel.

America's Air Force is continuously evolving, fueled by the dreams of five generations of airmen—from Giulio Douhet and Billy Mitchell, to Benjamin O. Davis and Bernard Schriever, to the current generation of pioneers. Creativity, hard work, prudent investment, and continued congressional support will ensure that the Air Force continues to deliver Global Vigilance, Reach, and Power for America.

GLOBAL VIGILANCE, REACH, AND POWER

The Air Force provides national security and promotes global stability through the integration of global vigilance, reach, and power—global vigilance to anticipate and deter threats; global reach to project military power and humanitarian relief anywhere in the world; and global power to deter conflicts or end them decisively.

DETERRENCE

Through demonstrated commitment, resolve, and a viable strategic force, America deters aggression with its ability to respond anytime, anywhere. The Air Force maintains this posture through its expeditionary, rapid global mobility, space support, and nuclear forces. With its bombers and land-based intercontinental ballistic missiles (ICBM), the Air Force operates two legs of the nuclear triad. The bomber, with its unique strengths of payload, range, and responsiveness, coupled with precision attack, has become the cornerstone of the Air Force's force projection capability. Similarly, the ICBM force provides a quick-reaction and highly survivable force with a mission capable rate greater than 99 percent.

INTELLIGENCE, SURVEILLANCE & RECONNAISSANCE

Air Force ISR assets provide continuous global presence, enabling decision makers to analyze, respond to, and influence events before conflicts begin. Current Air Force efforts focus on developing unmanned aerial vehicles (UAV), aircraft-mounted pod, and space technologies to improve mission reach and limit risk to airmen. In 2000, the full spectrum of Air Force ISR assets continued to monitor Iraqi compliance with UN sanctions and support worldwide contingency operations.

FORCE PROTECTION AND COUNTERINTELLIGENCE

The Air Force has institutionalized force protection through enhanced training, equipping, and reorganizing of its security forces to exploit technological advances. The Air Force is conducting extensive vulnerability assessments to improve security at permanent and deployed locations. In FY 2000, security forces from higher headquarters conducted 48 assessments of Air Force installations making recommendations concerning the physical security of people and resources, protection of food and water, and the ability to respond to incidents involving weapons of mass destruction (WMD). Similarly, the Air Force Office of Special Investigations (AFOSI) worked with various Air Force agencies to enhance their programs and increase efforts to protect emerging and existing sensitive technologies. AFOSI conducted more than 150 vulnerability assessments, 350 protective service activities, and 8,000 antiterrorism briefings in FY 2000, enabling commanders to take precautions to avert potential terrorism incidents.

COUNTER-NBC OPERATIONS

The Secretary of Defense described the potential use of WMD against America and its allies as the greatest and most complex challenge facing the DoD. The Air Force's balanced response to the proliferation of

WMD is to integrate actions based upon the four pillars of counterproliferation (proliferation prevention, counterforce, active defense, and passive defense). This strategy aims to deter or prevent an adversary from acquiring or using nuclear, biological, and chemical (NBC) weapons; disrupt or limit an attack; and survive and restore operations in the event of attack. The Air Force recently drafted a Counter-NBC Roadmap for procuring future systems and is currently developing doctrine and concepts of operation to sustain high operations tempo in the case of an NBC attack. Finally, the Air Force Technical Applications Center (AFTAC) operates and maintains a global network of nuclear detection sensors to analyze events for nuclear identification and it reports findings to the National Command Authorities (NCA). AFTAC is also leading the advancement of technologies to detect and monitor the development of foreign chemical and biological weapons.

INFORMATION ASSURANCE

A robust information assurance (IA) capability protects the warfighter. In 2000, the Air Force conducted 48 IA assessments of Air Force installations and developed a multi-layered strategic plan to integrate operations, people, technology and oversight through an enterprise-wide, network-centric concept. The Air Force is expanding this strategy to emphasize and provide integrated network operations and information protection, automated and dynamic detection and response, consolidated situational awareness and decision support, and IA in deployed and classified environments. While suspicious network activities, including probes and intrusion attempts, increased to an average of over 30 million events per month, the Air Force reduced the number of successful intrusions to only two per month (none against critical systems). Finally, the Air Force developed an Information Warfare modernization plan that outlines long-term investment strategies including IA and computer network defense.

COUNTER-NARCOTICS

The Air Force maintains operational oversight for several individual efforts that support the President's National Drug Control Strategy. The Air Force provides Airborne Warning and Control System (AWACS), EC-130 Senior Scout (signals intelligence), and Air National Guard and active-duty F-16 aircraft in support of U.S. Southern Command's counter-narcotic operations. These aircraft have recently relocated to Ecuador and the Netherlands Antilles in order to identify, scramble, and intercept potential airborne drug smugglers more effectively.

HUMANITARIAN OPERATIONS

The Air Force provides an American presence in regions of the world where the U.S. is working to build goodwill and improve relations, as well as enabling quick humanitarian relief during natural disasters. In March 2000, Joint Task Force ATLAS RESPONSE provided assistance to flood-ravaged Mozambique. Active duty and Reserve aircrews flew more than 600 sorties, delivering 970 tons of crucial supplies and transporting them to people isolated by the deluge. The Air Force also played an important role in fighting the worst wildfires in the western United States in 50 years. Eight Guard and Reserve C-130 aircraft equipped with modular airborne fire fighting systems flew nearly 600 missions and dropped almost 1.5 million gallons of fire suppressant. The Air Force transported Army, Marine, and civilian firefighters to Idaho, Montana and California. Forty-eight airlift missions transported 5,970 passengers and 339 tons of cargo.

BALKAN AND SOUTHWEST ASIA OPERATIONS

Airmen located throughout the world support Kosovo Forces (KFOR) and Stabilization Forces (SFOR) in the Balkans. Air Force contributions deployed to the region include fighter, tanker, ISR, and airlift aircraft; command and control capability; combat search and rescue forces; special operations units; UAVs; and space-based assets. Of the 48,000 total coalition combat sorties flown, almost 50 percent have been flown by the Air Force. Navy and Marine Corps sorties totaled 6 percent with the remaining 44 percent flown by NATO coalition partners.

The Air Force has over 8,000 airmen continuously deployed to Southwest Asia in support of Operations NORTHERN WATCH and SOUTHERN WATCH (the coalition's no-fly zone enforcement operations over northern and southern Iraq). Air Force ISR assets provide crucial intelligence and situational awareness to the NCA, particularly in the forms of indications and warning, intelligence, as well as monitoring Iraq's compliance with UN WMD mandates. The coalition flew more than 23,000 combat sorties during FY 2000 with no combat losses. Of these sorties, approximately 63 percent were flown by the Air Force. During strikes in response to Iraqi no-fly zone violations, 98 percent of all bombs dropped by U.S. forces were precision-guided munitions (PGM). They destroyed a significant portion of Iraq's anti-aircraft artillery systems, threat radars, and command centers.

SECURITY ASSISTANCE

Through foreign military sales and support for direct commercial sales of U.S. weapon systems, the Air Force has increased interoperability and encouraged foreign investment in the aerospace industry. In 2000, for example, the Air Force facilitated F-16 sales to the United Arab Emirates, Greece, and other countries. International Military Education and Training programs improved the skills of foreign military coalition partners, while the International Armament Cooperation program allowed the Air Force to co-develop and field interoperable and compatible weapon systems through cooperative agreements. Additionally, Air Force aviation advisory units counsel and train foreign military organizations to employ and sustain their own assets. These combined security assistance contributions enhance international relationships, promote interoperability, and facilitate coalition operations.

THE FOUNDATION—AIR FORCE PEOPLE

America's Air Force is a Total Force—Active, Guard, Reserve, and Civilian. Air Force people are its greatest asset and its highest priority. They carry out the mission, work the long hours (often separated from their families) and put forth the extra effort every time it is needed. Retaining them in a robust economy is one of the Air Force's most difficult challenges.

RECRUITING

The Air Force met its active-duty enlisted recruiting goal for FY 2000 and must continue to recruit quality people through 2001 and beyond. Although not expected to make its recruiting goal for FY 2000, the Air Force adopted a "wartime mentality" on recruiting and ultimately exceeded its enlisted goal by recruiting 34,369 against a goal of 34,000. Additionally, the Air Force brought 848 prior-service members back on active duty. In FY 2000, the Air Force achieved 97 percent of its line officer accession target, although FY 2000 production was 19 percent greater than FY 1998 and 3 percent above FY 1999. Increased production targets present a serious challenge as officer production requirements exceed current capacity. For

example, Reserve Officer Training Corps (ROTC) anticipates production shortfalls of 350 officers in FY 2002 and 280 in FY 2003.

As part of its “war on recruiting,” the Air Force pursued several efforts, including a recruiting summit that performed a cradle-to-grave review of the recruiting and accessions processes, resulting in many new initiatives to improve recruiting. The Air Force also increased the number of authorized recruiters in the field from 1,209 to 1,450 in May 2000 and plans to permanently increase this force to 1,650 by November 2001. The Air Force enhanced its enlistment bonus program by increasing the highest payments to \$17,000 for hard-to-fill skill areas during traditionally low enlistment months. Finally, the Air Force now uses professionally-developed television advertising, a centralized marketing and advertising office, the “Air Force Experience” road show, an improved Internet website, and movie theater advertising to tell the Air Force story and reach out to America. The Air Force is considering several initiatives to alleviate ROTC shortfalls, such as cadet contracts after their freshman rather than sophomore year; legislation to permit use of scholarship funds for expenses other than books, tuition, and fees; increasing the maximum age for scholarship eligibility; and increasing enlisted commissioning opportunities.

RETENTION

The Air Force relies on highly trained technical personnel whose skills are honed by years of military experience. By meeting its retention goals, the Air Force can minimize the number of recruits required and capitalize on the substantial training investment made in every person. However, the sustained strong economic climate in the U.S. and an increase in operations tempo have caused retention rates to fall.

Air Force enlisted retention trends are down, with officer continuation rates below historical averages. FY 2000 was the third consecutive year that the Air Force fell below its enlisted reenlistment goals. However, in FY 2001, the Air Force has seen a major improvement in first term reenlistment rates. Solving the retention challenge is crucial because more than 193,000 airmen, 69 percent of the enlisted force, will make a reenlistment decision between now and FY 2004. Officer retention faces similar challenges. Although rated officer (pilots, navigators, and air battle managers) retention rates increased over FY 1999 levels, retention in non-rated operations and mission-support fields declined. The Air Force ended FY 2000 approximately 1,200 pilots short of its 13,000 requirement. Support officer manning levels are also a concern, especially in the scientist, developmental engineering, communication, air traffic controller, and computer specialties. The Air National Guard and Air Force Reserve are also struggling with retention primarily due to the increasing number of active-duty days required to support contingency operations around the world. Because Guard and Reserve duty is a second job for most of their personnel, this voluntary deployment schedule creates unique retention problems with civilian employers.

To address these challenges, the Air Force developed 19 new initiatives during two retention summits in FY 2000. It also refined its EAF concept, giving Air Force Active, Guard, and Reserve personnel more stability and predictability in their deployment schedules. Additionally, since 1995, the Air Force tripled the number of enlisted specialties eligible for Selective Reenlistment Bonuses (SRB) and raised the maximum SRB payment from \$45,000 to \$60,000. As a result, the first term retention rates have improved to 57 percent through the first two months of FY 2001, exceeding the Air Force goal of 55 percent. Aviation continuation pay (ACP) is helping to curb pilot losses and bridge the gap until the Air Force fully benefits from increased pilot production and the 10-year active duty service commitment for pilot training (increased from 8 to 10 years, effective October 1, 1999). The Guard and Reserve have also taken steps to

retain their personnel through ACP and special salary rates for aviators, as well as authorizing special pay and enlistment bonuses for critical specialties.

CIVILIAN WORKFORCE

Recruiting and retention challenges are not limited to the uniformed members of the Air Force. The EAF has extended the role of civilians to providing reachback support to deployed troops, requiring a different mix of mid-level and senior civilian employees. In 1989, approximately 17 percent of the Air Force's civilian professionals were in their first five years of service, compared to less than 10 percent today. In the next five years, more than 40 percent of the Air Force's civilian workforces will be eligible for optional or early retirement. To meet these challenges, the Air Force convened two civilian workforce summits and improved its civilian force renewal programs. Recently obtained legislation to recruit scientists and engineers from academia and industry should help reinvigorate Air Force research laboratories. New legislation will also pay for civilian academic degrees and enable Voluntary Early Retirement Authority and Voluntary Separation Incentive Pay to meet force-shaping requirements. In the strong economy, the Air Force must continue to creatively recruit and retain the right mix of civilian employees.

QUALITY OF LIFE

The welfare of Air Force personnel is crucial to retaining quality people and directly impacts mission success. The Air Force has prioritized quality of life concerns through advocating fair and competitive compensation and benefits; reducing operations tempo; improving access to quality health care; increasing access to safe and affordable housing; expanding educational opportunities; and enhancing community and family programs, including diverse opportunities for religious expression and spiritual care. In 2000, the Air Force constructed more than 1,300 dormitory rooms for single airmen; built or improved more than 2,600 housing units; upgraded dining facilities; renovated fitness centers; and improved or added child development centers. For the Air National Guard, the work place is a primary quality of life issue. With Congressional support, nearly \$200 million was spent in FY 2000 to update aging Guard facilities. Airmen continue to rank compensation and benefits as their top quality of life concern and responded positively to the message of support and acknowledgement contained in the Fiscal Year 2000 and Fiscal Year 2001 National Defense Authorization Acts. Congressional support for the tangible benefits contained within these bills complement the intangible rewards of military service and is crucial to recruiting and retaining the Total Force.

THE DOMAIN—THE AEROSPACE CONTINUUM

The Air Force is developing a full-spectrum expeditionary aerospace force, enabled by integrated air, space, and information systems, with a domain stretching from the Earth's surface to its farthest orbits. To fully realize this vision and establish this integration foundation, the Air Force published a white paper entitled *The Aerospace Force—Defending America in the 21st Century* and created a comprehensive Aerospace Integration Plan. These documents identify near-term, high-leverage actions to further the development of integrated employment concepts, culture, cross-flow between personnel specialties, doctrine, organizational structures, equipment, and resource allocation.

THE METHOD—THE EXPEDITIONARY AEROSPACE FORCE

The EAF has become the centerpiece of the ongoing evolution of American aerospace power. Based on the demands for aerospace forces over the last 10 years, Air Force leaders designed the EAF force structure to ensure that on-call forces can meet steady-state commitments. This EAF structure includes ten AEFs and two Aerospace Expeditionary Wings, supporting mobility forces, and both operational and support capabilities not organically assigned to the AEFs or AEWs—capabilities such as intelligence, deterrence, space control, acquisition, health care, and education and training. An AEF is fast—the Air Force can deploy an AEF of about 120 combat aircraft and 10,000 people in 48 hours and can deploy up to 5 AEFs in 15 days. Each AEF is lethal—it is able to put PGMs on more than 200 targets per day. Finally, the AEF is flexible—it provides the nation an increasingly capable, trained-to-task, strategically relevant force that rapidly projects power anywhere in the world. Instead of sending personnel and equipment forward on an ad hoc basis, this new structure provides tailored packages to meet the Joint Force Commander's specific requirements. In support of the EAF, the Air Force global command and control infrastructure allows high-fidelity operational support in near real-time from the continental United States. This revolutionary reachback capability lightens the load for mobility assets by reducing the amount of supporting forces required to deploy. With all 10 AEFs having deployed once during the last 15 months, the first EAF cycle is complete. The lessons learned from this rotation are being used to refine and improve the force's expeditionary structure and concept of operations.

THE TOTAL FORCE

Simply stated, the Air Force could not perform its expeditionary mission without the contributions of its Air National Guard and Air Force Reserve forces. They contribute 71 percent of the tactical airlift, 67 percent of the strategic tankers, 62 percent of the strategic airlift, and a significant portion of other Air Force capabilities critical to its expeditionary capability. In addition to providing expeditionary support, the Air Force Reserve is the sole provider of unique capabilities such as aerial spraying and hurricane tracking, while the Air National Guard provides the nation's airborne air defense capability. The seamless integration of the Guard and Reserve into the Total Force is a crucial step toward realizing the full potential of the EAF.

READINESS

Air Force readiness has declined by 23 percent since 1996. This overall decline is attributed to past underfunding of spare parts, a sustained high operations tempo, aging systems, and a less experienced workforce. Efforts to improve readiness have been at the expense of system modernization and infrastructure. Without a budget increase, aging systems, with their increased maintenance demands, will continue to siphon funds from modernization programs. Today, the average aircraft is approximately 22 years. Even with currently programmed procurements the figure will continue to increase, reaching 30 years by 2020. In order to support these aging weapon systems, selected high-priority avionics, engine, and structural modernization programs have been developed to extend their life cycles. Continued recapitalization of these systems is essential to ensure that the Air Force will be ready to meet any future challenges.

In FY 1999–2001, Congress, DoD, and the Air Force took specific actions to address shortfalls in spare parts. Six factors lead to the spare parts availability problems: constrained spares funding over several years; aging weapon systems; aggressive inventory reduction; high operations tempo; multiple changes in

logistics concepts; and two depot closures. To address these shortages, the Air Force, with help from Congress and the Administration, began an aggressive funding campaign to put spares back on the shelves. In FY 1999, the Air Force obligated an additional \$904 million to spare parts including: \$382 million for parts backlog; \$387 million to support Kosovo contingency operations (addressing both the spare parts surge during the conflict and reconstitution efforts); and an additional \$135 million for engine-related spares at the Oklahoma Air Logistics Center. In addition, across the FYDP, \$500 million for consumable aviation spare parts was added by the Defense Logistics Agency (DLA) to support all military spare shortages, and this should accelerate the spare parts recovery period. The Air Force remains cautiously optimistic that these recent funding plus-ups will arrest the decline in parts shortages and improve aircraft availability.

Consolidation of Air Force maintenance depots also contributed to the readiness decline. Complying with the 1992 Base Realignment and Closure decision, the Air Force reduced the number of depots from five to three, and the transfer of this workload created significant delays. During FY 2000, the workload transfer resulted in both a decline in mission capable rates and an increase in total Air Force not-mission capable hours (hours an aircraft is unavailable for mission related duties). The Air Force expects the negative trends to reverse as the workload stabilizes.

The Air Force also has been unable to invest adequately in infrastructure, including base operating support, real property maintenance, family housing, and military construction. Military construction supports the restoration and modernization of infrastructure, but limited funding has forced the Air Force to execute only its most urgent requirements, deferring most requirements to the unfunded outyears. In fact, the Air Force is now on a 250-year replacement cycle for its real property, versus an industry standard of 50 years.

SAFETY

The Air Force continues its aggressive safety program, improving its downward trend in aviation accidents. FY 2000 resulted in a record-breaking year across the spectrum of aviation safety. The navigation safety program, which will install collision and terrain avoidance systems on Air Force aircraft, promises to even improve upon this result. In ground safety, motor vehicle accidents continue to be the leading cause of airmen fatalities. While the loss of even one airman is disturbing, ground safety losses are well below the national average and below the rates of other organizations of comparable size.

THE BUILDING BLOCKS—MODERNIZATION OF CORE COMPETENCIES

The Air Force executes its mission through its inherent core competencies, which are not totally unique to the Air Force, but underpin its contribution to the nation's overall military capability. These core competencies are enabled by the Air Force's attributes of surveillance, speed, range, stealth, and precision. They are executed by the integration of people, platforms, weapons, bases, logistics, and supporting infrastructure. Leadership in these areas remains dependent upon a carefully linked requirements and acquisition process.

Balancing competing demands in a dynamic security and budget environment is a formidable task. Therefore, the Air Force has developed a responsible, time-phased approach that seeks to modernize

without sacrificing readiness. Its priorities are procuring the C-17, increasing C-5 reliability, upgrading conventional bombers and PGMs, developing new command and ISR systems, and modernizing the fighter (beginning with the F-22) and the tanker fleets. The fielding of relevant, capable space forces, with emphasis on the Space Based Infrared System (SBIRS), the Global Positioning System (GPS), the Evolved Expendable Launch Vehicle (EELV), secure communication satellites, and upgrading the space launch ranges are priorities that span all phases of this plan.

There is great risk associated with continuing to fund readiness, as noted earlier, at the expense of modernization. The average age of the Air Force fleet has never been as high as it is now, presenting a myriad of problems and costs. Near- and mid-term capability is at risk while sustainment costs rise, further draining Air Force accounts of needed procurement dollars. A significant and sustained boost in procurement funding is needed to reverse this trend and modernize the force structure. A description of each core competency modernization program follows:

AEROSPACE SUPERIORITY

Aerospace Superiority—the ability to control the vertical dimension so that the joint force has freedom from attack and freedom to attack—is the critical first step in achieving full-spectrum military dominance in all operations. In the 21st century, aerospace superiority depends increasingly on the rapid launch of space-based platforms with the seamless integration of strike platforms combined with space control capabilities. The new EELV partnership between military, civilian, and commercial agencies will meet spacelift requirements at a 20 to 50 percent lower cost than present systems. The first EELV commercial launch is scheduled for 2001 with the first government launch in 2002. SBIRS includes both high and low component satellites that will provide timely missile warning to national and theater commanders. The first SBIRS high component launch is set for 2004, and the program is on track for a low component launch during 2006. The F-22's attributes of stealth and speed will allow it to penetrate and destroy an adversary's anti-access capabilities, enabling other in-theater joint force actions. It should be operational in 2005 and is crucial to maintaining the current U.S. advantage in aerial combat. Concurrently, the airborne laser (ABL) is a boost-phase missile intercept system which will contribute to the nation's multi-layered theater missile defense architecture. In January 2000, the Air Force began modification of the 747 aircraft that will become the first of two ABL platform prototypes. This program is on track for a lethal demonstration against a theater ballistic missile in late 2003. Additionally, the space-based laser integrated flight experiment will determine the feasibility and utility of destroying ballistic missiles in the boost phase with directed energy. It is scheduled for an integrated test in 2008, with an Anti-Ballistic Missile Treaty compliant, on-orbit space test in the 2012 timeframe. Finally, as space becomes an ever more important area of vital national interest, space control will prove essential to achieving the force-multiplying effect of all space capabilities. Counterspace technologies, such as improvements to various ground-based sensors, development of a space-based space surveillance system, and refining the integrated command and control of all space assets will become increasingly important in the future.

INFORMATION SUPERIORITY

Information Superiority is the core competency upon which all others rely. Key to achieving information superiority is the ability to gain, exploit, defend, and attack information and information systems. It assures U.S. forces have a clear picture of the battlespace and can operate freely in the information domain, while denying the enemy the same ability. Integral elements include information-in-warfare (e.g., ISR, weather,

communications) and information warfare (e.g., electronic warfare, psychological operations, computer network attack and defense).

Currently, the Air Force's limited airborne ISR systems are stretched to satisfy an extremely high demand, making integration of these systems into the EAF challenging. The Joint Surveillance Target Attack Radar System (JSTARS) and the AWACS provide theater commanders real-time, wide-area surveillance of enemy ground and air movements. Three JSTARS aircraft will be delivered to the Air Force in FY 2001. The AWACS radar system improvement program, providing increased detection capability over the current system, is projected to achieve initial operational capability in FY 2001. UAV systems, such as Predator and Global Hawk, offer great promise in alleviating the shortage of airborne ISR collection assets. Global Hawk successfully completed a military utility assessment and is poised to move forward as a formal Air Force acquisition program with delivery of production vehicles in FY 2003. Congruently, space-based ISR assets will provide nearly continuous overflight of enemy targets to complement airborne and ground-based sensors. Space-based radar (SBR) is one of the most important military space capabilities the Air Force is researching. An operational SBR would provide worldwide ground surveillance which is not possible with current reconnaissance systems. The high cost of ISR modernization and the proliferation of information technology around the world make obtaining and maintaining information dominance a difficult, but essential, challenge to future military operations. Finally, the Air Force Chief of Staff hosted an Electronic Warfare (EW) Summit in July 2000 to reaffirm the Air Force's commitment to robust EW capabilities throughout the spectrum of operations. Summit initiatives included the development of an EW mission survivability concept of operations and an EW Roadmap to evaluate, direct, and prioritize future electronic warfare resources and requirements.

Military satellite communication systems, the Defense Satellite Communications System (DSCS) and MILSTAR, place powerful communication tools in the hands of battlefield commanders around the world, enabling information reachback to the continental U.S. and continuity with the NCA. The first DSCS III Service Life Enhancement Program (SLEP) satellite, launched in January 2000, doubled military wideband communication capacity to tactical users over legacy DSCS III satellites. The MILSTAR constellation will continue to grow to meet operational requirements with a third operational satellite projected to begin providing jam-resistant communication for tactical operations in February 2001.

PRECISION ENGAGEMENT

Operation ALLIED FORCE demonstrated that theater commanders must have the ability to precisely strike targets in adverse weather conditions while minimizing risk and collateral damage. The Air Force's new generation of guided weapons uses GPS coupled with inertial navigation systems to put bombs precisely on targets, day or night, in nearly all weather conditions. The Joint Air-to-Surface Standoff Missile (JASSM), Joint Standoff Weapon (JSOW), Joint Direct Attack Munition (JDAM), and Wind Corrected Munitions Dispenser (WCMD) are among the Air Force's high-priority precision engagement programs. The JASSM is currently undergoing engineering and manufacturing development flight-testing and is scheduled to enter operational service in 2003. JDAM became operational in 1999; JSOW and WCMD achieving operational status in 2000.

GLOBAL ATTACK

Global Attack assets allow the nation to successfully conduct military operations across the spectrum of conflict. The Air Force's legacy fighters, including the F-15, F-16, and A-10, provide a potent mix of air-to-air and air-to-surface capability. However, these aging platforms are growing more expensive to maintain and operate, while their combat effectiveness has eroded compared to current and emerging threats. The Joint Strike Fighter program will field an affordable, highly common family of next-generation strike fighter aircraft for the Air Force, Navy, Marine Corps, and America's allies. The Air Force bomber force will gain increased lethality and improved survivability through the integration of precision strike and enhanced electronic combat capabilities. B-1 and B-52 upgrades include final integration of the JDAM, JASSM, JSOW, and WCMD delivery capability combined with communications, avionics, situational awareness, and defensive system upgrades to ensure their lethality and survivability. The Air Force is also applying lessons learned from Operation ALLIED FORCE to the flexible targeting and electronic connectivity of the B-2 using Link-16 and voice connectivity through UHF satellite communications. Finally, the Air Force is committed to integrating the MK-82 500-pound JDAM on the B-2, enabling this aircraft to strike up to 80 different targets per sortie.

Modernization efforts for the Minuteman III ICBM, Air-Launched Cruise Missile, and Advanced Cruise Missile are crucial to ensure the viability of these systems through 2020. However, START II uncertainty continues to pose a challenge for Air Force planning and programming. Limited funding support for the ICBM force has rendered near-term Peacekeeper sustainment difficult and Minuteman III modernization uncertain. The deferral of treaty ratification, combined with an unmet requirement for additional funding for the ICBM force, could cause eventual degradation of these missile systems. However, a capable and credible nuclear force remains essential to deterring an enemy's use of NBC weapons against the United States or its military forces.

RAPID GLOBAL MOBILITY

Rapid Global Mobility ensures the nation can respond quickly and decisively anywhere in the world. The C-17 is the flagship of the Air Force's modernization program, while C-5 upgrades improve reliability, maintainability, and availability of these transports. Modernization of the tactical airlift fleet is being accomplished by acquiring new C-130J aircraft to replace older C-130Es and through upgrading the remaining C-130s with the Avionics Modernization Program (AMP). Procuring the Next Generation Small Loader (NGSL) will complement the Tunner (60K) loader by supporting intra-theater mobility operations at forward and smaller bases. The procurement of 50 CV-22s will provide both a heavy vertical lift capability and a lighter mobility footprint for Air Force Special Operations Forces. Finally, tanker modernization efforts include KC-10 and KC-135 avionics, navigation, and safety enhancements.

To meet tomorrow's challenges, the Mobility Requirements Study 2005 (MRS-05), an update to the 1995 Mobility Requirements Study and Bottom-Up Review, determined future mobility requirements to meet the current National Military Strategy (NMS). An analysis of alternatives regarding oversize and outsize mobility aircraft will determine the most cost-effective airlift fleet mix to meet the MRS-05 recommendations. Additionally, the Tanker Requirements Study for 2005 (TRS-05), baselined from MRS-05, will forecast future tanker requirements. With the KC-135 average fleet age at 40 years with operations and support costs rising, recapitalization of the tanker fleet is crucial.

The Spacelift Range System (SLRS) Modernization Program, also known as Range Standardization and Automation, is replacing and standardizing unreliable and inefficient equipment on the Eastern and Western launch ranges. This program is improving range efficiency and reducing operation costs. The congressionally-directed National Launch Capabilities Study confirmed that the SLRS modernization program, coupled with the EELV program, would provide the efficiencies and capacity necessary to support future launch demands for national security and commercial payloads. By FY 2006, the SLRS modernization effort is on track and scheduled to deliver the automation and standardization required for reducing range reuse times—from days to hours.

AGILE COMBAT SUPPORT

The success of the EAF ultimately rests on the Air Force's ability to establish and sustain forward operations. Enhanced beddown planning, improved expeditionary engineering capability, responsive resupply, reachback access to stateside organizations, and increased reliability and maintainability eliminate the need for large deployed inventories, reduce the required support footprint, and free up critical airlift. Information technologies, such as the Air Force portal in the Global Combat Support System will also provide real-time situational awareness and continue to enhance service support for the warfighter.

THE APPROACH—INNOVATION AND ADAPTATION

The Air Force has a proud heritage of innovation and adaptation. Innovation and adaptation are more than inserting technology into the force. They involve the commitment to the continual renewal of aerospace operations, capability, and structure to provide the nation the most effective return on its investment. Therefore, the Air Force is streamlining its procurement process and business practices by capitalizing on private commercial technological developments and studying and fielding new methods to rapidly apply new technologies.

EXPERIMENTATION AND WARGAMING

The Air Force conducts experiments and wargames to evaluate current and future aerospace capabilities. The Joint Expeditionary Force Experiment 2000 is a large-scale, bi-annual exercise to evaluate innovative initiatives in a realistic combat scenario. This year's experiment focused on improving ways to integrate support functions into expeditionary operations and test new procedures and technologies in order to conduct time-critical targeting. In June 2000, Global Engagement V examined alternative force structures 10 to 15 years in the future and demonstrated the continued importance of assured access to operational areas of responsibility. Finally, in 2001, the Aerospace Future Capabilities Wargame will influence and shape Air Force strategic direction by testing alternative concepts, systems, and force structures 20 to 25 years into the future.

BATTLELABS

The Air Force battlelabs have a mission to rapidly identify and assess innovative operations and logistics concepts. The six current battlelabs are the Air Expeditionary Force Battlelab, Command and Control Battlelab, Force Protection Battlelab, Information Warfare Battlelab, Space Battlelab, and Unmanned Aerial Vehicle Battlelab. A seventh battlelab, recently commissioned, will focus on air mobility. This year, battlelab initiatives have included application of commercial scheduling software for the Air Force

Satellite Control Network; telecommunications firewalls for base phone systems; aircraft inspections with digital x-ray equipment; and the use of speech recognition to reduce mission planning time.

SCIENCE AND TECHNOLOGY

The Air Force is investing in a broad and balanced set of technologies to advance core competency capabilities well into the future. It is focused on basic research in areas such as propulsion, fuel efficiency, weapon system durability, munitions effectiveness, and unmanned flight vehicles. Applied and advanced research in micro-satellites, hyper-spectral sensors, global battlespace infosphere, and information operations will help secure information superiority for the future warfighter. In addition, advanced technology development in directed energy, time-critical targeting, and terminal guidance for small smart munitions will help assure the critical future capabilities of precision engagement and global attack. The science and technology challenge remains to adapt to the faster pace of technology introduction, the widespread proliferation of high-tech products, and concept affordability.

PLANNING, PROGRAMMING, AND BUDGETING SYSTEM REFORM

The Air Force Resource Allocation Process is being reengineered to link strategic planning, requirements generation, programming, and budgeting throughout the resource allocation process. This new process will also have a more rigorous and consistent analytical underpinning. During the implementation of the FY 2003 Amended Program Objective Memorandum process, Air Force major commands will be given an explicit slice of total obligation authority with the flexibility to program the funds to best meet requirement priorities. This approach will also improve accountability and visibility for Air Force resource requirements as they undergo DoD and Congressional review and funding decisions.

INFORMATION TECHNOLOGY REFORM

In 2000, the Air Force created and filled the new position of Principal Deputy Assistant Secretary for Business and Information Management. This senior executive is responsible to the Air Force Chief Information Officer for standards, architecture, oversight of information technology (IT) budgets, and business process reengineering. Commercial industry has found tremendous savings via network-centric solutions by placing applications on the Internet for desktop access. By leveraging these initiatives, for example, the Air Force developed a virtual internet tool to allow all personnel to monitor and make personnel record changes on their own through the Internet. The Air Force is also developing an Air Force-wide portal and an Air Force white-pages directory, consolidating major command level electronic-mail servers, and reengineering organizational structures and concepts of operations for future IT enterprises and contracting.

ENVIRONMENTAL CLEANUP

The goal of the Air Force's environmental cleanup program is to protect human health and the environment while using safe and cost-efficient methods to remediate and close out installation restoration program sites. The Air Force completed 64 percent of its total site requirements and met its first defense planning guidance goal in 1999, three years early, by having remedies in place for over 50 percent of its high relative risk sites. The Air Force is improving interagency communication by conducting regular partnering meetings with state, regional, and federal environmental protection offices and local communities impacted by the cleanup program. The Air Force believes communication and cooperation are key to the success of these environmental cleanup initiatives.

THE COMMITMENT

The Air Force will provide the nation an integrated full-spectrum expeditionary aerospace force, using surveillance, speed, range, stealth, and precision to deliver maximum effects with minimum risk. The Air Force will recruit and retain the best people—the foundation of current readiness and combat capability—and provide them the quality of life and service they deserve. The Air Force will achieve aerospace dominance through the seamless integration of its air, space, and information systems by providing trained-to-task, tailored expeditionary forces that are lighter, leaner, and more lethal for the Joint Force Commander. However, the Air Force must recapitalize its bomber, tanker, lift, missile, CSAR, space, ISR systems, and infrastructure, while leveraging evolving technology and new operational concepts to control the growing cost of readiness. The Air Force is a partner in America's national security and has made these commitments to keep faith with the men and women of America's Air Force as well as the nation.

REPORT OF THE CHAIRMAN OF THE RESERVE FORCES POLICY BOARD

The Reserve Forces Policy Board (RFPB) is pleased to provide in the Secretary of Defense's Annual Defense Report a brief summary of the Board's major activities, observations, and recommendations. The Board, acting through the Assistant Secretary of Defense for Reserve Affairs, is the principal independent policy adviser to the Secretary of Defense on matters relating to the Reserve components.

The value and credibility of the Board rests in its civilian and military composition and the diversity of experience among its members. It is made up of 24 senior level representatives from the offices of the service secretaries, the Office of the Joint Chiefs of Staff, and the active and reserve components. The Board provides timely and relevant policy advice to the Secretary of Defense and DoD leadership on issues affecting the Total Force. The Board also meets regularly with senior Department of Defense officials, members of Congress, administration officials and others who play a role in leading, shaping and managing our military forces. The Board solicits issues, listens to the needs of the services, and recommends policies to enhance our National Military Strategy. The Board's annual report, published separately and submitted under Title 10 USC, Section 113, presents an independent and comprehensive look at key issues and programs affecting all the Reserve components and includes detailed summaries of the Board's positions and recommendations on specific issues and programs.

BOARD ISSUES AND RECOMMENDATIONS

During the September 2000 outbrief to the Deputy Secretary of Defense the board recommended that the Secretary of Defense take action to initiate a separate review on the loss of the National Guard and Reserve Equipment Account (NGREA). The Board believes the deletion of NGREA will have an adverse impact on Guard and Reserve readiness. The board also recommended that the Office of the Secretary of Defense supervise an effort to accurately quantify the full resource requirements for the active and reserve components, then present this information to the incoming administration as a datum for their fiscal year planning purposes.

Other RFPB actions in recent years include: the establishment of positions for two reserve component advisors to the chairman of the Joint Chiefs of Staff and ten reserve component advisors to the CINCs, Congressional action to raise the reserve chiefs to the rank of O-9, and the release of the Secretary of Defense's active/reserve integration memorandum. This historic memorandum has remained the seminal guidance for the Board's continuing efforts on behalf of all the Reserve components

TOTAL FORCE EDUCATION

In 1999, the Board felt that the lack of an adequate base of knowledge and understanding of the capabilities and resources of the Active, Guard, Reserve and Civilian components of our military forces was an impediment to Total Force integration. The Board noted that relevant information about all aspects of the reserve components should be embedded in the content of the course curriculum of all professional military education from basic training and pre-commissioning courses through the most senior level schools. At the direction of Secretary Cohen, the RFPB staff, in conjunction with the Army War College and National Defense University, conducted an education summit at the Army War College campus, Carlisle Barracks, PA, in early 1999. More than 70 senior flag and general officers and education experts from throughout the Department of Defense attended the three-day meeting to work the details necessary to submit a policy recommendation to the Secretary of Defense. The summit conclusions were presented in a report that included recommended actions that the board took to the Secretary of Defense in September 1999. Responding to the Board's recommended action, Secretary Cohen published a Total Force education memorandum in February 2000. Subsequently, OSD P&R directed a committee be convened, co-chaired by OSD Reserve Affairs and the RFPB Chairman, to implement Secretary Cohen's Education Memorandum. This effort is ongoing with Service and OSD participation.

Annually, the Board invites the service chiefs, the reserve component chiefs, representatives of the various associations that support the Guard and Reserve, and other well-qualified experts to brief Total Force status and issues. This year several themes and concerns were common to all components: recruiting and retention, modernization, readiness, operational and personnel tempo, and sustaining the force in the coming years. These concerns track closely with RFPB ad hoc committees already created to study and recommend policy actions on similar issues.

RECRUITING AND RETENTION

For the last several decades, people who joined the Guard or Reserve came predominately from active duty units and were fully trained and experienced. With a smaller active force, this recruiting pool has shrunk. A 400 percent increase in operations tempo over the last decade has also adversely impacted recruiting. The Board has observed that expectations of increased participation by Reservists, over and above the conditions of the contract under which they were recruited, have occurred without the benefit of national discussion or debate. This change evolved largely unnoticed as an evolutionary response to ongoing commitments required by the National Military Strategy, and has taken a toll on recruiting and retention. Conditions are exacerbated by a general lack of enthusiasm for military service among some of the most heavily recruited groups resulting in manpower level shortages.

MODERNIZATION

Modernization and force interoperability issues continue to impact senior leaders and policy makers on Capitol Hill and in the Department of Defense. Current policy calls for active and reserve components to be equally equipped and trained, and fully integrated. Aging equipment continues to impact interoperability and readiness with all the Service Chiefs citing this as one of their primary concerns. The Deputy Secretary of Defense has identified this problem to the Board as an important readiness issue. The Board, in turn, strongly believes that Reserve component readiness is driven by interoperability and the age of our equipment, and that overall readiness hinges on how the Reserve components fare in the modernization accounts and funding process. Additionally, commanders in chief in all the theaters expect

their reserve forces to be transparent with active duty units when they arrive in country. This requires up to date and completely interoperable equipment. However, funding to upgrade and modernize equipment still does not always reach down to the Guard and Reserve. The gradual erosion of the National Guard and Reserve Equipment Account has impeded plans to upgrade and modernize Guard and reserve equipment. The story is the same in each of the services: Reserve component equipment upgrades lag behind that of the active forces because of a lack of sufficient dedicated funding. With the significant reduction of overall U. S. military forces in the last decade, the nation cannot afford to allow the Reserve components to degrade to the inferior equipment levels of the past. The RFPB recognizes the danger inherent in this reality and has adopted the position that a continued decline in NGREA funding will adversely affect Guard and Reserve readiness. This issue was briefed to the Deputy Secretary of Defense during the September 2000 Board meeting.

REVIEW

Education, equity increases in pay and benefits, enhanced recruiting and retention, full-time support personnel, funding necessary to upgrade and maintain weapon systems, and a clear view of the road ahead for the Guard and Reserve of the 21st century should be the overarching goals of a healthy and integrated Guard and Reserve force. We are fortunate to live in a participatory democracy where anyone so inclined can play an active role in our government. We should be equally proud of the men and women who choose to volunteer their time, energies and sometimes their very lives to be part of the finest, most capable military force in history. We owe it to them to give them the tools they need to get the job done and the rewards they deserve when their mission is completed.

FIELD TRIPS TO COMMANDERS IN CHIEF

UNITED STATES PACIFIC COMMAND

As part of the tasking to assist in the implementation of the Secretary of Defense's memorandum on Total Force integration released in 1997, the Board scheduled visits to various commanders in chief to discuss Reserve component issues and facilitate solutions. Several members of the Board visited United States Pacific Command's area of responsibility during the past year. During the trip the Board members visited Japan, Korea, and Thailand. While in Japan, Board members visited the headquarters of U.S. Forces Japan, U.S. Army Japan, 5th Air force, and met with the United States Ambassador. During the Korea stop, Board members visited the Headquarters U.S. Forces Korea, Eighth Army, 7th Air Force, Special Operations Command Korea, and the 501st Military Intelligence Brigade. In Thailand, they visited the Joint U.S. Military Advisory Group Thailand, the Royal Thai Supreme Command Headquarters, and met with the United States Ambassador.

Common themes found throughout the trip were:

- Commanders increasingly are using drilling Individual Mobilization Augmentees (IMAs) to make up staff shortages.
- Reserve component members provide continuity for major exercises.

- There is a direct correlation between having personnel on J/C/G-1 staffs who are knowledgeable of the Guard and Reserve and a command's ability to access Reserve component members.
- Commands are increasingly dependent on Reserve component units to provide a broad spectrum of support and expertise.

UNITED STATES SOUTHERN COMMAND

The Board, at the invitation of the US Coast Guard Reserve, traveled to Florida to meet with Coast Guard representatives and discuss their missions. The Board received briefings at the Coast Guard 7th District Headquarters, the Coast Guard Integrated Support Command, and at the headquarters of Coast Guard Group, Miami. Board members visited Coast Guard facilities, talked to Coast Guard personnel, and inspected equipment used on a daily basis. The Board then traveled to U.S. Southern Command Headquarters and met with senior staff to discuss issues, and the command's interface with Guard and Reserve units. Board members also traveled to Joint Interagency Task Force (JIATF) East where they were briefed by the Director of JIATF on the challenges faced by his command. This command is very interested in additional Reserve component participation in current missions. Board members toured the operations center and discussed issues and barriers the JIATF staff feels are important to the success of their mission, particularly in the Caribbean basin. The Board traveled to Coast Guard Group, Key West for an up-close look at real world operations and to see first hand the effort required to put plans into operation. While in Key West members visited with individual Coast Guard members to discuss their concerns and issues and to brief RFPB activities.

U. S. ARMY III CORPS, FORT HOOD

Members of the Board traveled to Fort Hood, Texas, to observe the integration of the active duty and Reserve components within III Corps. The Board met with the Commanding General of Fort Hood and received a series of briefings from the staff. During these meetings the Board had a unique opportunity to speak via video teleconference with the commanding general of the 49th Division Texas Army National Guard, who was deployed with his unit to Bosnia. Also, joining in the VTC was the commanding general of the 1st Cavalry Division, deployed with the 49th Division in Bosnia. Both of these leaders attributed the 49th's operational success in Bosnia to the high caliber of personnel in their organizations, pre-deployment training, and integration and teaming. The 1st Cavalry Division's assistance to the 49th AD was instrumental in the successful execution of the 49th's lead role in the SFOR7 mission in Bosnia. During the visit it was apparent that morale was high. Additionally, the cooperation and professional respect among the members of all three Army components was a model of successful integration. Members of the III Corps team are making great strides toward making full integration a reality.

Several other briefings presented the following common themes:

- Cooperation and teaming between III Corps units and the Army National Guard and Army Reserve are outstanding.
- Active and Reserve component commanders indicated a need for additional full-time support personnel particularly at Division Headquarters.

- Commanders stressed the need for commonality of equipment to achieve interoperability between the active and reserve components. For example, Bradley Fighting Vehicles in the Guard are not equipped with the more modern fire control systems of Active duty brigades.

BOARD MEETINGS

In accordance with Department of Defense Directive 5120.2, the Board meets four times annually and at the call of the Chairman when required. Board affairs are conducted independently of members' service affiliations, but with due regard to statutory responsibilities for the conduct and operation of the active and reserve components. Quarterly Board meetings were held throughout the year along with staff and Board offsites. Legal research into the Board's Congressional mandate has resulted in the Board voting to recommend to Congress changes in Title 10 language dealing with the Board. The Board concluded a busy year with the Annual Alumni Meeting in September 2000.

ANNUAL ALUMNI MEETING, SEPTEMBER 2000

The annual meeting of the Reserve Forces Policy Board and the RFPB alumni was held on 19-20 September 2000, at the Army Navy Country Club, Arlington, Virginia. The Board, alumni, and executive committee members of the National Committee for Employer Support of the Guard and Reserve (NCESGR) heard comments by several members of the House of Representatives; the chiefs of all the Services; the Reserve component chiefs and directors; the leadership of several military associations; and the Acting Principal Deputy Assistant Secretary of Defense for Reserve Affairs. The Chief of Naval Operations also addressed the Board and guests at a dinner that evening. Highlights of the meeting included briefings from the national security advisors for both presidential candidates.

The reserve chiefs and directors commented on issues of recruiting and retention, modernization, readiness, full time support, operational tempo, and sustaining the force in future years. Also discussed was the impact on the Reserve components of reduced or lost NGREA funding. They agreed NGREA was very successful when funded at levels equal to Reserve component needs. It was noted that the primary forces being used for peacekeeping and operations other than war often have the lowest priority for resource requirements.

The Principal Deputy Assistant Secretary of Defense for Reserve Affairs stated that the Reserve components, the RFPB, and OSD/RA form a synergistic team. He considers family readiness, improved personnel systems, employer support, and a review of Guard and Reserve training/deployments requirements to be important considerations for the next administration. He observed that the nation's contract with Guardsmen and Reservists has changed without national debate to something much larger than one weekend a month and two weeks a year. He asked that the Board focus on macro policy issues to include utilization of Reserve components; examining changes to the reserve contract; duration of call-ups; continuity of health care; family readiness; and employer support.

Subsequent to the briefings, there was discussion regarding the proposed DoD Common Access Card (CAC). Since first directed by Secretary Perry, the RFPB has strongly supported the development of Smart Card technology. The Board's long-standing position is that this technology is necessary to facilitate access to Reservists, enhance Active duty and Reserve integration, reduce infrastructure (cost savings), improve readiness, and enhance quality of life.

The Board is concerned that the original intent of the DoD smart card, to support the warfighting CINCs, has been lost with the new CAC. The CAC, in its initial configuration, does not support deployment processing, personnel readiness or PERSTEMPO tracking functions. These CINC supporting functions were the impetus for initial development of the Smart Card technology and remain just as valid today. The high priority for chip storage space for access and Public Key Infrastructure (PKI) requirements is to the possible exclusion of CINC requirements. The CAC's remaining capacity must be prioritized to support joint warfighting requirements.

Another issue of concern involves the failure of the CAC to record multiple DoD affiliations in the initial version. The CAC presents a unique opportunity to further Total Force integration by providing a truly common military ID card with no visual differentiation between Active and Reserve status. Selected reserve personnel reporting on active duty in excess of 30 days will be issued a second Active status ID card for the period of active duty. This policy administratively and financially penalizes those components with the highest levels of Reserve integration.

The Board met with the Deputy Secretary of Defense, and briefed him on Board activities and issues. The Deputy Secretary of Defense commented that culturally the active duty, Guard and Reserve should be the same. He also stated that the critical readiness issues center on modernization and how we work the modernization account and process. In his view, most readiness problems are driven by the age of our equipment while equipment age is the result of the high cost and time required to field replacements. The Deputy Secretary of Defense's comments reflected the views on modernization expressed by the service chiefs and shared by the Board.

The Chairman raised the Board's position on the National Guard and Reserve Equipment Account (NGREA). He stated that if the Congressionally added NGREA terminates at the end of the fiscal year, the board believes there will be an adverse impact on Guard and Reserve readiness. The Chairman indicated that the Board would review the success of integrating the NGREA account into the services' budgets and proposed to the Deputy Secretary of Defense that this would be a logical point in time for OSD to conduct an independent evaluation of the success the Services have had in allocating sufficient funds to Guard and reserve equipment needs. The demise of NGREA was intended to acknowledge maturation of the Total Force integration and funding equity, but the Board believes that the reality of meeting Guard and Reserve equipment needs has not been satisfied in existing corporate processes. The Board asked the Deputy Secretary of Defense to initiate a review of the impact of losing NGREA to ensure that Guard and Reserve interoperability and modernization will not be adversely impacted by the loss of this funding.

STRATEGIC ISSUES

During the year the Board voted to work the following strategic issues and to include all of them in their FY 2000 Annual Report on Reserve Component Programs submitted to the President and the Congress:

- National Guard and Reserve Equipment
- Personnel Reliability Program
- Fairness of Pay and Benefits

- Tax Incentives for Employers
- Recruiting and Retention
- Three-Star Issue for Reserve Component Chiefs and Directors

USE OF THE GUARD AND RESERVE

The Board had extensive discussions on what constitutes an appropriate use of the Reserve components. While this represents a sign of successful integration to a total force, some members see potential problems for the future. There has been no recent national debate on what should be the proper role of the military in general and of the Reserve components in particular. Instead, the policy of increasing global commitments with declining forces has evolved incrementally over time. Board members recommended that this be a major issue to be examined in detail by the Board.

CONCLUSION

The Secretary of Defense has taken a positive and proactive approach to furthering Total Force integration through his Total Force Education initiative. OSD/P&R and OSD/RA have worked diligently to capitalize on Total Force integration initiatives with successful efforts to improve both pay and benefits. The constantly changing world political, economic, and strategic situation demand that this process continue to capture and utilize the full measure of military capability residing in the Guard and Reserve. As DoD is challenged by a changing world, the need for properly trained and equipped Reserve components becomes a fundamental tenet to meeting these challenges. While DoD has successfully prosecuted changing world requirements sought by National Command Authorities using first class Active, Guard and Reserve forces, the necessity of continuing this progress though adding new problems continues. Employer support, equity in pay and benefits for Guardsmen and Reservists who transit repeatedly from civilian life to worldwide military missions and back to civilian life, modern and interoperable equipment are essential ingredients to a successfully integrated combat force. The Board continues to work these core issues with the Reserve components, their associations, the Services, CINCs, OSD, and Congress to ensure continued success of the U. S. armed forces in the 21st century the Reserve Forces Policy Board's annual report, entitled *Reserve Component Programs Fiscal Year 2000*, is scheduled for publication in February 2001. This report provides detailed information on important Reserve component issues and programs, and has become one of the premier publications on the Reserve components.

DEFENSE TECHNICAL INFORMATION CENTER
REQUEST FOR SCIENTIFIC AND TECHNICAL REPORTS

TITLE ANNUAL REPORT TO THE PRESIDENT AND CONGRESS 2001 .

1. Report Availability (Please check one box)

- ☐ This report is available. (Complete section 2a - 2f)
☐ This report is not available. (Complete section 3)

2a. Number of Copies
Forwarded

2b. Forwarding Date

2c. Distribution Statement (Please check one box)

DoD Directive 5230.24, "Distribution Statements on Technical Documents," 18 Mar 87, contains seven distribution statements, as described briefly below. Technical documents MUST be assigned a distribution statement.

- ☒ DISTRIBUTION STATEMENT A: Approved for public release. Distribution is unlimited.
- ☐ DISTRIBUTION STATEMENT B: Distribution is authorized to U.S. Government Agencies only.
- ☐ DISTRIBUTION STATEMENT C: Distribution is authorized to U.S. Government Agencies and their contractors.
- ☐ DISTRIBUTION STATEMENT D: Distribution authorized to U.S. Department of Defense (DoD) and U.S. DoD contractors only.
- ☐ DISTRIBUTION STATEMENT E: Distribution authorized to U.S. Department of Defense (DoD) components only.
- ☐ DISTRIBUTION STATEMENT F: Further dissemination only as directed by the controlling DoD office indicated below or by higher authority.
- ☐ DISTRIBUTION STATEMENT X: Distribution authorized to U.S. Government agencies and private individuals or enterprises eligible to obtain export-controlled technical data in accordance with DoD Directive 5230.25, Withholding of Unclassified Data from Public Disclosure, 6 Nov 84.

2d. Reason For the Above Distribution Statement (in accordance with DoD Directive 5230.24)

2e. Controlling Office

2f. Date of Distribution Statement
Determination

3. This report is NOT forwarded for the following reasons. (Please check appropriate box)

- ☐ It was previously forwarded to DTIC on _____ (date) and the AD number is _____
- ☐ It will be published at a later date. Enter approximate date if known. _____
- ☐ In accordance with the provisions of DoD Directives 3200.12, the requested document is not supplied because: _____

Print or Type Name

JANICE Sims

Signature

per Jack Rika Title
Cov.

Telephone

703 697 5737

(For DTIC Use Only)

AQ Number M02-05-0608